Universal Procedures Table

Model Numbers:

230 -001 thru -004

630 -001 thru -009

75 -019 thru -021

Service and Parts Manual

Some Models NO LONGER IN PRODUCTION

Some service parts may not be available for this product!

630 shown

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

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75:
(-019) **E-2**
(-020 / -021) **E-3**

**** Indicates multiple pages due to a serial number break for the parts illustration***

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Symbols

WARNING
Indicates a potentially hazardous situation which could result in serious injury if not avoided.

Caution
Indicates a potentially hazardous situation which could result in injury if not avoided.

Equipment Alert
Indicates a potentially hazardous situation which could result in equipment damage if not avoided.

Note
Amplifies a procedure, practice, or condition.

✓ In Section A, test the components in the order indicated. (ex. ***1st*** ✓ then, ***2nd*** ✓)

Refer to Section B for component testing procedures.

These symbols are used throughout this manual to represent the operational status of table functions and components.

Indicates the function / component is working properly. No action required.

Indicates the function / component is working, but a problem exists.

Indicates the function / component is not working at all.

Ordering Parts

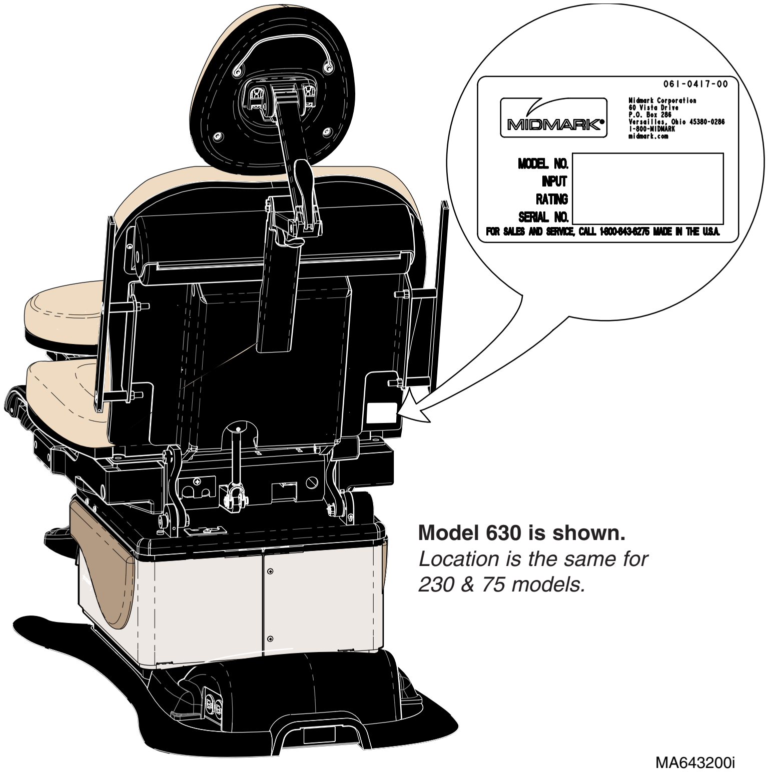
The following information is required when ordering parts:

- Serial number & model number
- Part number for desired part.
  [Refer to Exploded Views / Parts Lists section]

Non-warranty parts orders may be faxed to Midmark using the Fax Order Form in the back of this manual.

For warranty parts orders, call Midmark's Technical Service Department with the required information.
Hours: 8:00 am until 5:00 pm EST [Monday - Friday]
Phone: 1-(800)-Midmark

Model / Serial Number Location


061-0417-00
MIDMARK
Midmark Corporation
60 Vista Drive
P.O. Box 286
Versailles, Ohio 45380-0286
1-800-MIDMARK
midmark.com
MODEL NO.
INPUT
RATING
SERIAL NO.
FOR SALES AND SERVICE, CALL 1-800-643-6275 MADE IN THE U.S.A.

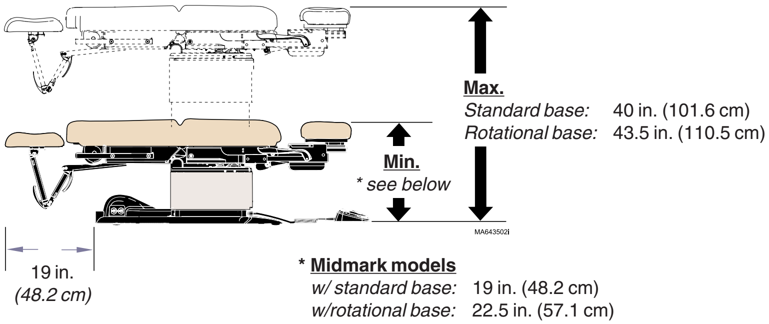
Model 630 is shown.
Location is the same for 230 & 75 models.

MA643200i

General Information

Weights, Dimensions, Electrical Specifications

Patient Weight (Maximum)	450 lbs (204.1 kgs)
Paper Roll (maximum size):	18 in. long x 3.5 in. diameter (45.7 x 8.9 cm)
Range of Motion & Dimensions	[See illustration]
Weight of Table:	
230 / 630 / 75 (w/standard base)	455 lbs (206.4 kg)
w/packaging & skid	510 lbs (231.3 kg)
230 / 630 / 75 (w/rotational base)	540 lbs (244.9 kg)
w/packaging & skid	600 lbs (271.1 kg)
Power Cord:	8 ft. (243.8 cm) long
Electrical Requirements:	[See Compliance Charts]
Foot / Hand Control Voltage:	10 VAC, SELV (Safety Extra Low Voltage)
Duplex Receptacle (optional) maximum load:	115 VAC, 3A, 50/60 Hz
Fuses:	
Main Power *(located at power cord inlet)*:	
F1 & F2	6.3A, 250V, Type-T, 5 x 20 mm High-Breaking Current
Upholstery Heater *(located on uph. heater PC board)*:	
F1 & F2	1/2 A, 250V, Type-T, 1-1/4" x 1/4"
Duty Cycle *(motor run time)*:	Intermittent Operation [30 seconds ON / 5 minutes off]
Classifications:	Class 1, Type B Applied Part
Protection against ingress of fluids:	Ordinary Equipment
Foot Control only:	IPX1
Regulatory Compliance:	[See Compliance Charts]
Table Speeds (by function):	
Base / Back / Tilt *(all models)*	15 - 25 seconds
Foot *(630)*	less than 15 seconds
Foot *(230)*	less than 20 seconds

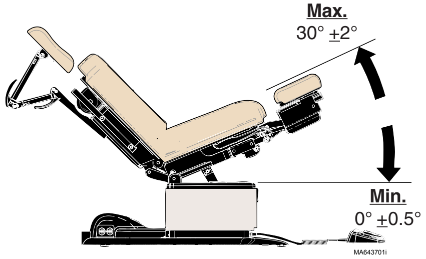


Max.
Standard base: 40 in. (101.6 cm)
Rotational base: 43.5 in. (110.5 cm)

Min.
** see below*

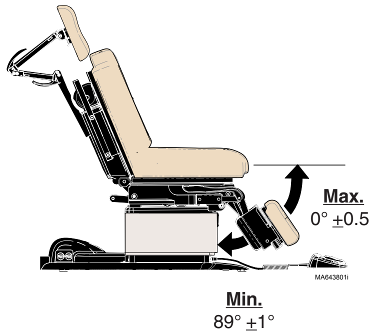
19 in.
(48.2 cm)

* **Midmark models**
w/ standard base: 19 in. (48.2 cm)
w/rotational base: 22.5 in. (57.1 cm)
Ritter models
w/standard base: 22.5 in. (57 cm)
w/rotational base: 26 in. (66 cm)



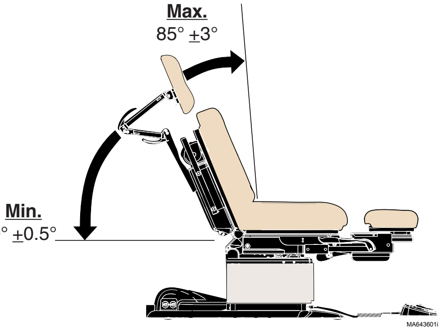
Max.
30° ±2°

Min.
0° ±0.5°



Max.
0° ±0.5°

Min.
89° ±1°



Max.
85° ±3°

Min.
0° ±0.5°

Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, or with oxygen, or nitrous oxide.

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Model Identification / Compliance Chart - 230 & 75 (-019)

Fire Code Ratings

All standard upholstery sets comply with: California Bureau of Home Furnishing Technical Bulletin 117
Optional upholstery sets are available that comply with:California Bureau of Home Furnishing Technical Bulletin 133.

Model	Description	Serial Number Prefix	Complies To:				Electrical Ratings:		
			UL 60601-1	CAN/CSA 22.2, #601.1-M90	IEC 60601-1	EN 60601-1-2 (EMC)	VAC +/-10%	Amps	Cycles (Hz)
230-001	**Ritter Universal Proc. Table** *(Non-Programmable)*	**V**	X	X	X	X	***Configurable***		50 / 60
							115 230	7 3.5	
230-002	**Ritter Universal Proc. Table** *(Non-Programmable)* w/ *Receptacle*	**V**	X	X	X	X	115	10	50 / 60
230-003	**Ritter Universal Proc. Table** *(Non-Programmable)* *w/ rotational base*	**V**	X	X	X	X	***Configurable***		50 / 60
							115 230	7.5 3.8	
75-019 **(230-004)**	**Ritter Universal Proc. Table** *(Non-Programmable)*	**V**	X	X	X	X	***Configurable***		50 / 60
							115 230	7 3.5	

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General Information

Model Identification / Compliance Chart - 630 & 75 (-020 / -021)

Fire Code Ratings

All standard upholstery sets comply with: California Bureau of Home Furnishing Technical Bulletin 117
Optional upholstery sets are available that comply with:California Bureau of Home Furnishing Technical Bulletin 133.

Model	Description	Serial Number Prefix	Complies To:				Electrical Ratings:		
			UL 60601-1	CAN/CSA 22.2, #601.1-M90	IEC 60601-1	EN 60601-1-2 (EMC)	VAC +/-10%	Amps	Cycles (Hz)
630-001	**Midmark Universal Proc. Table** *(Non-Programmable)*	V	X	X	X	X	***Configurable*** 115 230	7 3.5	50 / 60
630-002	**Midmark Universal Proc. Table** *(Programmable)*	V	X	X	X	X	***Configurable*** 115 230	7 3.5	50 / 60
630-003	**Midmark Universal Proc. Table** *(Non-Programmable)* *w/ Receptacle*	V	X	X	X	X	115	10	50 / 60
630-004	**Midmark Universal Proc. Table** *(Programmable)* w/ *Receptacle*	V	X	X	X	X	115	10	50 / 60
630-005	**Midmark Universal Proc. Table** *(Non-Programmable)* *w/ Rotational Base*	V	X	X	X	X	***Configurable*** 115 230	7.5 3.8	50 / 60
630-006	**Midmark Universal Proc. Table** *(Prog.)* w/ *Rotational Base*	V	X	X	X	X	***Configurable*** 115 230	7.5 3.8	50 / 60
630-007	**Midmark Universal Proc. Table** *(Programmable)* *w/ Heated Upholstery*	V	X	X	X	X	115	7	50 / 60
75-020 (630-008)	**Midmark Universal Proc. Table** *(Non-Programmable)* *w/ Receptacle*	V	X	X	X	X	115	10	50 / 60
75-021 (630-009)	**Midmark Universal Proc. Table** *(Programmable)* w/ *Receptacle , no foot control*	V	X	X	X	X	115	10	50 / 60

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Scheduled Maintenance
Universal Procedures Table

Interval	Inspection or Service	Service, Adjust , Repair and / or Replace as Required (Refer to appropriate S&P or Quick Reference Guide)	230	630
Weekly	Cleaning	Clean upholstery with diluted bleach solution 10:1 (water:bleach)	X	X
		Wipe painted metal & plastic surfaces with a clean soft cloth and mild cleaner. (NOTE: Periodic application of common furniture wax will ease cleaning, and maintain the luster of the surfaces).	X	X
	Obvious Damage	Visually inspect components for damage that could cause problems during operation or unsafe operation.	X	X
Semi-Annually	Mechanical Operation	Check all mechanical functions using the foot control. Repeat using the hand control when present.	X	X
		Table shrouds should move smoothly & quietly when base is raised & lowered. (NOTE: There are plastic glides on the shroud tabs. Missing glides may result in noisy operation.)	X	X
	Labels / Decals	Replace any missing or illegible labels.	X	X
	Hardware	All fasteners must be present and fastened securely.	X	X
	Electrical System	Inspect power cord and all wiring for damage.	X	X
		Be sure all electrical connections are tight.	X	X

Date of Service: _____/____/____

Location:

Service Technician:

Model:

Serial Number:

General Information

Warranty Information

SCOPE OF WARRANTY
Midmark Corporation (“Midmark”) warrants to the original purchaser its new Alternate Care products and components (except for components not warranted under “Exclusions”) manufactured by Midmark to be free from defects in material and workmanship under normal use and service. Midmark’s obligation under this warranty is limited to the repair or replacement, at Midmark’s option, of the parts or the products the defects of which are reported to Midmark within the applicable warranty period and which, upon examination by Midmark, prove to be defective.

APPLICABLE WARRANTY PERIOD
The applicable warranty period, measured from the date of delivery to the original user, shall be one (1) year for all warranted products and components.

EXCLUSIONS
This warranty does not cover and Midmark shall not be liable for the following: (1) repairs and replacements because of misuse, abuse, negligence, alteration, accident, freight damage, or tampering; (2) products which are not installed, used, and properly cleaned as required in the Midmark “Installation” and or “Installation / Operation Manual for this applicable product. (3) products considered to be of a consumable nature; (4) accessories or parts not manufactured by Midmark; (5) charges by anyone for adjustments, repairs, replacement parts, installation, or other work performed upon or in connection with such products which is not expressly authorized in writing in advance by Midmark.

EXCLUSIVE REMEDY
Midmark’s only obligation under this warranty is the repair or replacement of defective parts. Midmark shall not be liable for any direct, special, indirect, incidental, exemplary, or consequential damages or delay, including, but not limited to, damages for loss of profits or loss of use.

NO AUTHORIZATION
No person or firm is authorized to create for Midmark any other obligation or liability in connection with the products.

THIS WARRANTY IS MIDMARK’S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. MIDMARK MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS.

SF-1487 REV. A1

Additional Information
Failure to follow the guidelines listed below will void the warranty and/or render the table unsafe for use.

- If a malfunction is detected, do not use the table until necessary repairs are made.

- Do not attempt to disassemble table, replace components, or perform adjustments unless you are a Midmark authorized service technician.

- Do not use another manufacturer's parts to replace malfunctioning components. Use only Midmark replacement parts

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Section A

Operation & Troubleshooting

Go To Page:

Function / System **Page**
Power To The Table:
  models w/Standard Base A-2
  models w/Rotational Base A-4
Base Up / Down A-8
Back Up / Down A-18
Tilt Up/Down A-28
Foot Up/Down A-38
Crash Avoidance System A-48
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Quick Chair Function A-62
Table Receptacles A-66
Upholstery Heater System A-68
Rotational Base Brake System A-72

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitve. ex. A-2)

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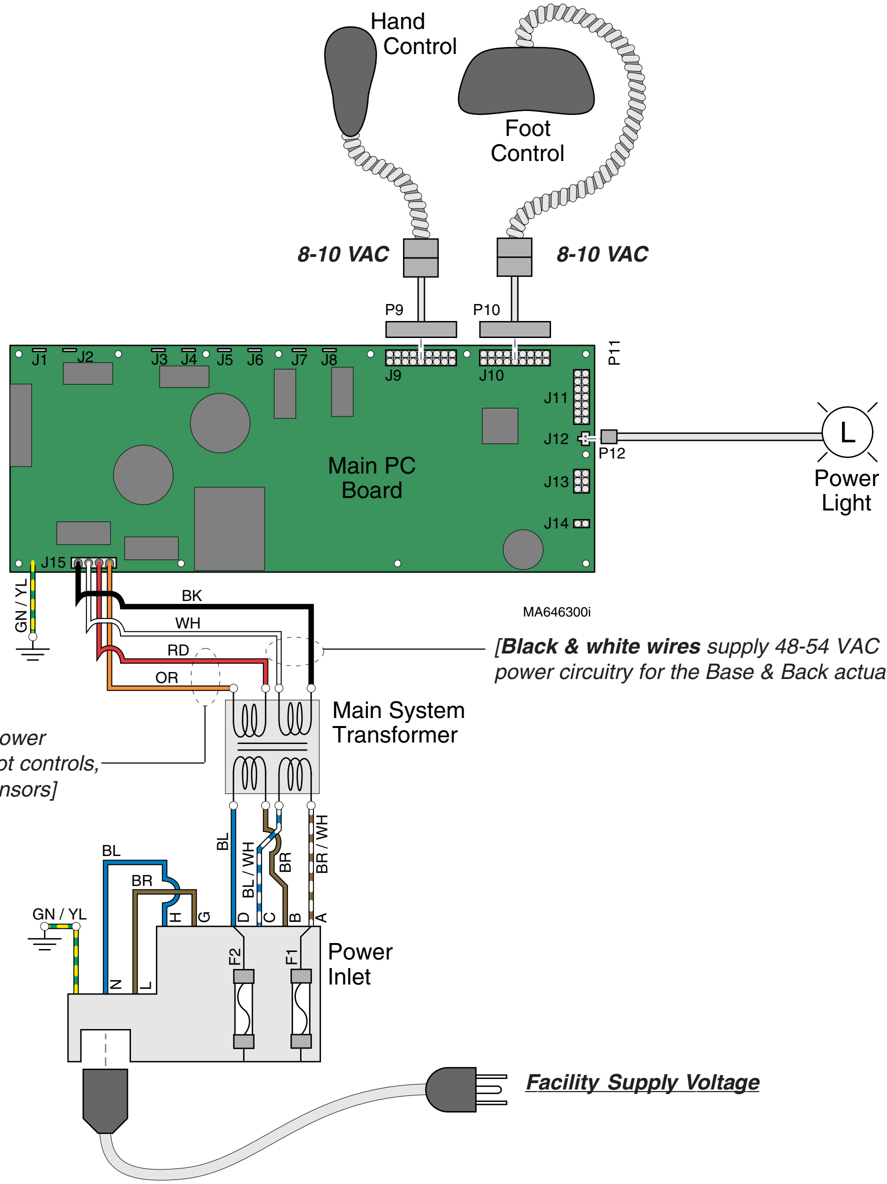
Power To The Table *(models w/ Standard Base)*

This illustration shows only the components that affect ALL TABLE FUNCTIONS.
Refer to the following page for a detailed description of the power supply to the table.

Troubleshooting
[No Power / No Functions Will Operate]

Power Light is: **Go To Page:**
OFF A-6
ON A-7


Hand Control
Foot Control
8-10 VAC
8-10 VAC
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
P11
J11
J12
P12
J13
J14
J15
Main PC Board
L
Power Light
GN / YL
BK
WH
RD
OR
MA646300i
Main System Transformer
BL
BL / WH
BR
BR / WH
BL
BR
GN / YL
H
G
D
C
B
A
N
L
F2
F1
Power Inlet
Facility Supply Voltage

If Power Light is OFF, there is no power to PC Board.
If Power Light is ON, proper voltage is present at PC Board.

*[**Black & white wires** supply 48-54 VAC to power circuitry for the Base & Back actuators]*

*[**Red & orange wires** supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/foot controls, power light, all limit switches, and position sensors]*

Models:	***230** (-001/-002/-004)*	***630** (-001 thru -004) & (-007 thru -009)*	***75** (-019 thru -021)*
Serial Numbers:	all	all	all

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Next

Power To The Table *(models w/ Standard Base)*

Facility Supply Voltage

With the table's power cord properly connected, facility supply voltage *(115 or 230 VAC)* is supplied thru the cord to the power inlet.

Power Inlet

EQUIPMENT ALERT

The voltage setting displayed in the power inlet window must match facility supply voltage *(115 or 230 VAC)*. *[Remove fuse holder and rotate 180° to change voltage setting].*

Current flows thru two fuses in the power inlet, to the main system transformer.

Main System Transformer

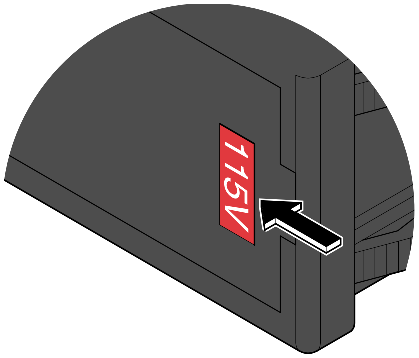
NOTE

This transformer is protected from overload by a thermal cutout feature. This will automatically reset when the transformer cools.

Line voltage *(115 or 230 VAC)* is supplied to the main system transformer. The transformer reduces the voltage and current flows to the main PC board thru two separate windings *(four wires)*.

[The black & white wires supply 48-54 VAC to power circuitry for the Base & Back actuators only].

[The red & orange wires supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/foot controls, power light, all limit switches, and position sensors (on Midmark models only)].



Power Indicator Light

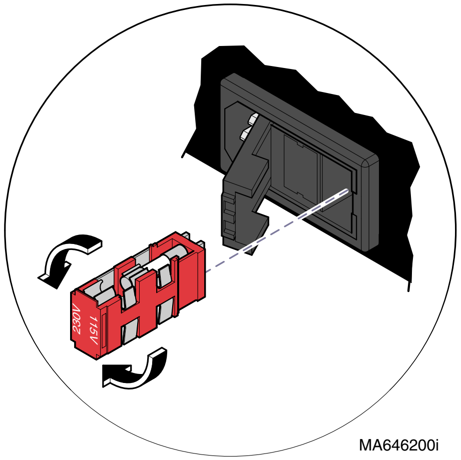
When voltage is applied to the PC board, the power light is illuminated.

Main PC Board

Circuitry on the PC board provides the required voltage to power all of the table's components: *hand/foot controls, actuators, limit switches, and position sensors.*

Hand / Foot Controls

Circuitry on the main PC board supplies 8-10 VAC to the hand / foot control connection ports.



MA646200i

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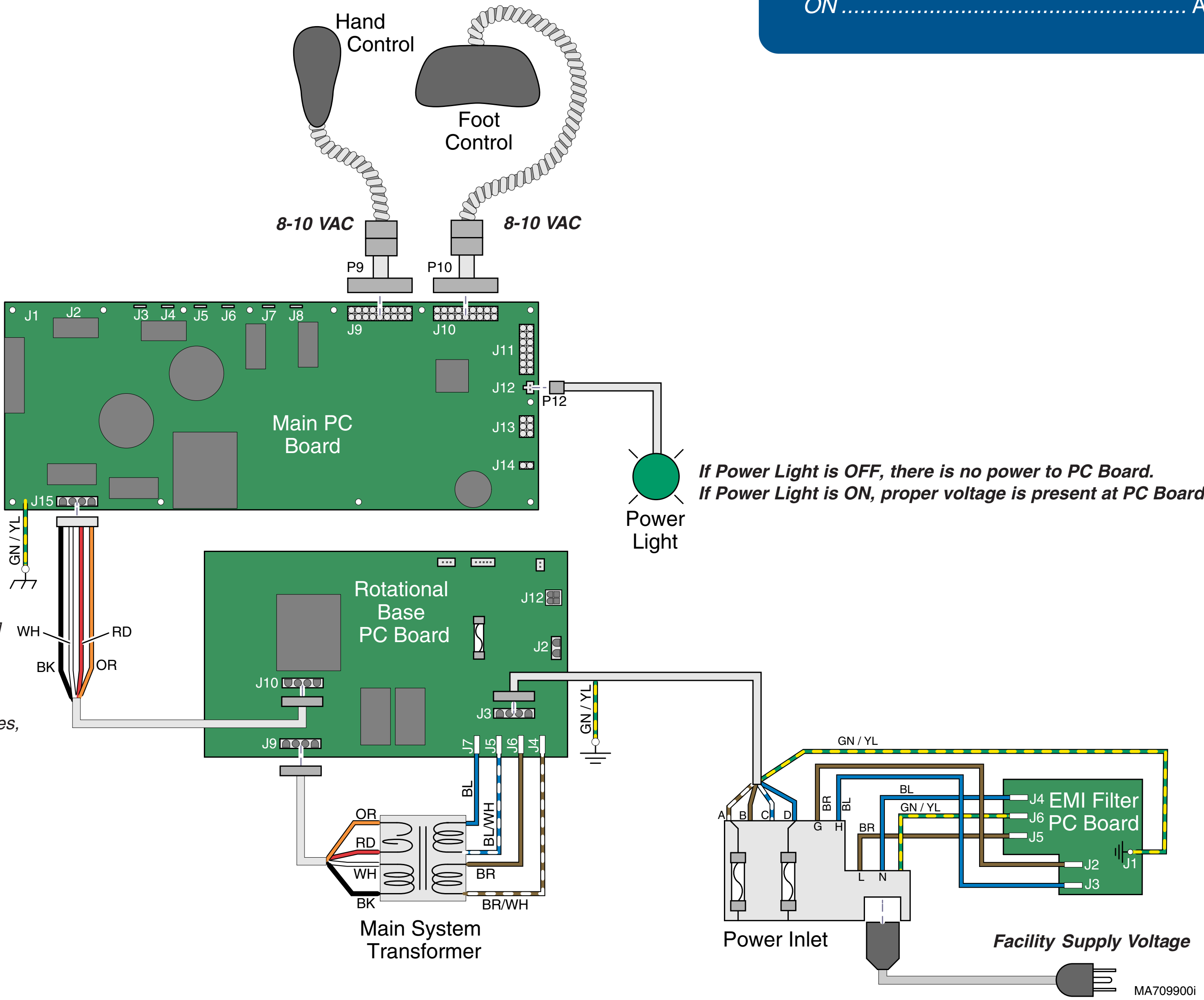
Troubleshooting
[No Power / No Functions Will Operate]

Power Light is: **Go To Page:**
OFF A-6
ON A-7

Power To The Table *(models w/ Rotational Base)*

This illustration shows only the components that affect ALL TABLE FUNCTIONS.
Refer to the following page for a detailed description of the power supply to the table.


Hand Control
Foot Control
8-10 VAC
8-10 VAC
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
P12
J13
J14
J15
Main PC Board
Power Light
GN / YL
WH
RD
BK
OR
Rotational Base PC Board
J12
J2
J10
J3
J9
J7
J5
J6
J4
GN / YL
BL
BL/WH
OR
RD
WH
BK
BR
BR/WH
Main System Transformer
GN / YL
A
B
C
D
G
H
BR
BL
BL
GN / YL
BR
L
N
J4
J6
J5
EMI Filter PC Board
J2
J3
J1
Power Inlet
Facility Supply Voltage
MA709900i

If Power Light is OFF, there is no power to PC Board.
If Power Light is ON, proper voltage is present at PC Board.

*[**Black & white wires** supply 48-54 VAC to power circuitry for the Base & Back actuators]*

*[**Red & orange wires** supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/foot controls, power light, all limit switches, and position sensors]*

Models:	***230*** ***(-003)***	***630*** ***(-005 & -006)***
Serial Numbers:	all	all

Power To The Table (models w/ Rotational Base)

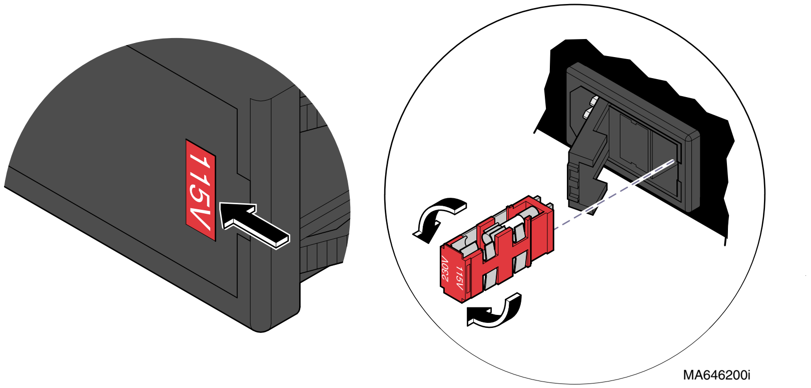
Facility Supply Voltage

With the table's power cord properly connected, facility supply voltage *(115 or 230 VAC)* is supplied thru the cord to the power inlet.

Power Inlet / EMI Filter Board

EQUIPMENT ALERT
The voltage setting displayed in the power inlet window must match facility supply voltage *(115 or 230 VAC)*.
[Remove fuse holder and rotate 180° to change voltage setting].

Current flows from the power inlet thru the EMI filter board, then back thru the power inlet fuses to the rotational base PC board.



Rotational Base PC Board

Current flows thru the rotational base PC board to the main system transformer. The transformer reduces the voltage and current flows back to the rotational base PC board.

Circuitry on the rotational base PC board provides the required voltage to power the rotational base brake system.

The reduced voltage is supplied to the main PC board thru the rotational base PC board.

Main System Transformer

NOTE
This transformer is protected from overload by a thermal cutout feature. This will automatically reset when the transformer cools.

Line voltage *(115 or 230 VAC)* is supplied to the main system transformer thru the rotational base PC board. The transformer reduces the voltage and current flows back to the rotational base PC board, then to the main PC board thru two separate windings *(four wires)*.

[The black & white wires supply 48-54 VAC to power circuitry for the Base & Back actuators only].

[The red & orange wires supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/ foot controls, power light, all limit switches, and position sensors (on Midmark models only)].

Power Indicator Light

When voltage is applied to the PC board, the power light is illuminated.

Main PC Board

Circuitry on the PC board provides the required voltage to power all of the table's components: *hand/foot controls, actuators, limit switches, and position sensors.*

Hand / Foot Controls

Circuitry on the main PC board supplies 8-10 VAC to the hand / foot control connection ports.

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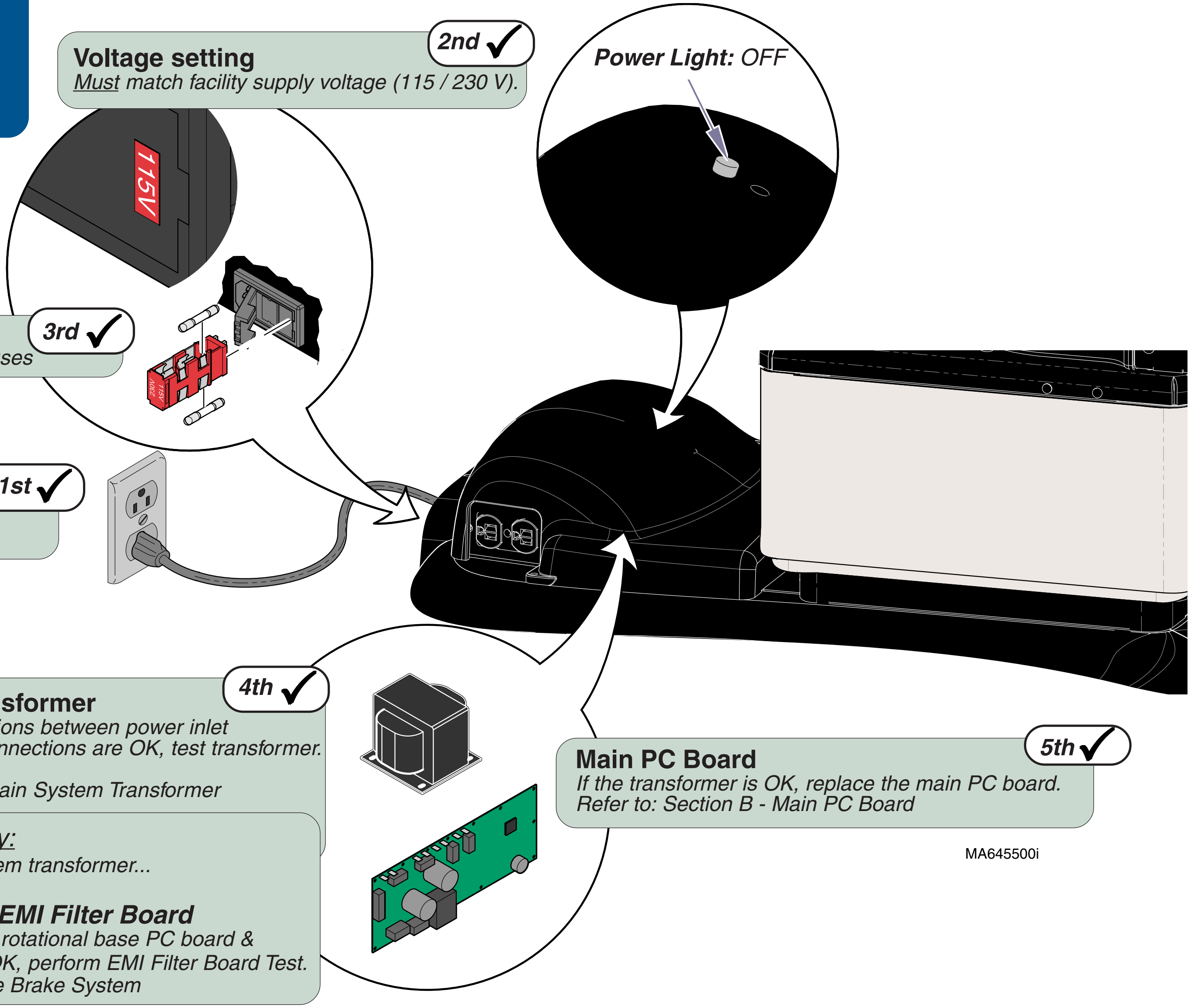
Power to the Table - continued

Problem: *No functions will operate - **and** Power light is **OFF.***

Refer To: Go To Page:
Primary Fuses B-2
Main System Transformer B-30
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Faclity Supply Voltage 1st ✓
Check power cord connections.
Check facility circuit breaker.

Voltage setting 2nd ✓
Must match facility supply voltage (115 / 230 V).

Primary Fuses 3rd ✓
Refer to: Section B - Primary Fuses

Main System Transformer 4th ✓
Check all wire connections between power inlet & main PC board. If connections are OK, test transformer.

Refer to: Section B - Main System Transformer

Models w/Rotational Base only:
If there is no power to the main system transformer...

Rotational Base PC Board / EMI Filter Board
Check all wire connections between rotational base PC board & the transformer. If connections are OK, perform EMI Filter Board Test.
Refer to: Section B - Rotational Base Brake System

Main PC Board 5th ✓
If the transformer is OK, replace the main PC board.
Refer to: Section B - Main PC Board

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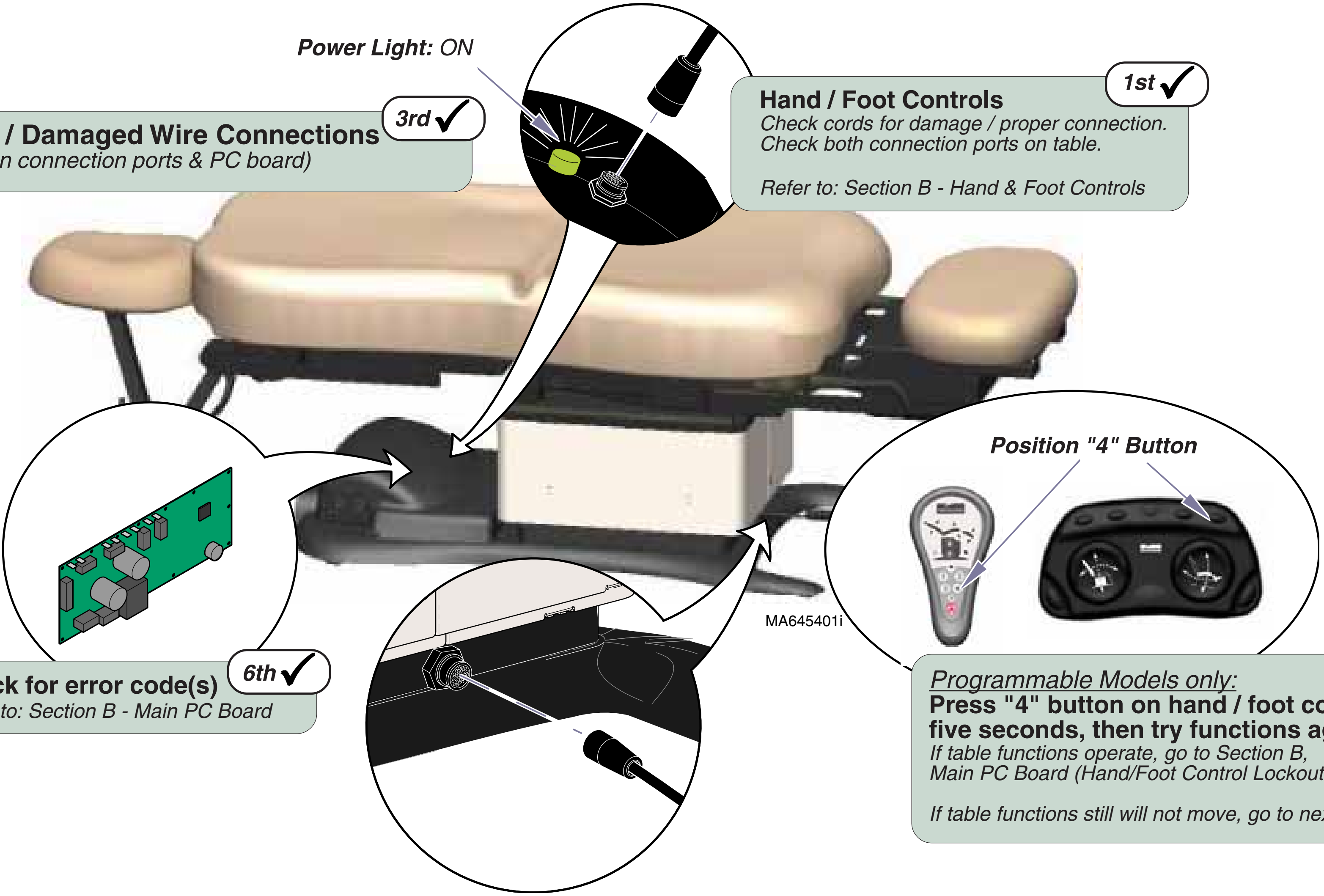
Power to the Table - continued

Problem: *No functions will operate - **and** Power light is **ON.***

Refer To:	**Go To Page:**
Hand & Foot Controls	B-6
Main PC Board	B-40
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Hand / Foot Controls *1st* ✓

Check cords for damage / proper connection.
Check both connection ports on table.

Refer to: Section B - Hand & Foot Controls

Loose / Damaged Wire Connections *3rd* ✓

(between connection ports & PC board)

Programmable Models only: *2nd* ✓

Press "4" button on hand / foot control for five seconds, then try functions again...

If table functions operate, go to Section B, Main PC Board (Hand/Foot Control Lockout Feature)

If table functions still will not move, go to next check.

Check for error code(s) *6th* ✓

Refer to: Section B - Main PC Board

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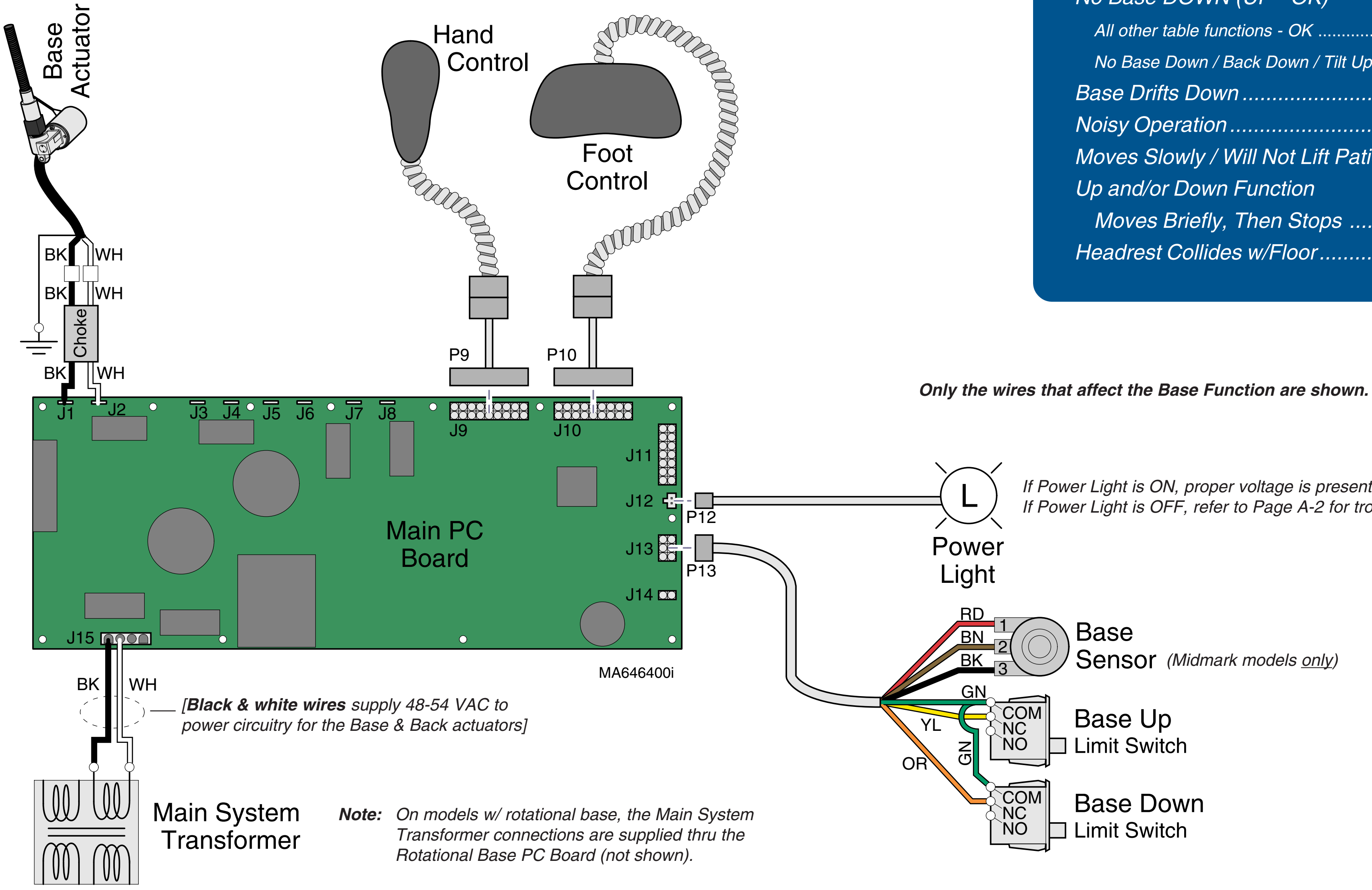
Troubleshooting
[Base Up / Down Function]

Problem	**Go To Page:**
No Base UP or DOWN	A-10
No Base UP (DOWN - OK)	A-11
No Base DOWN (UP - OK)	
All other table functions - OK	A-12
No Base Down / Back Down / Tilt Up	A-48
Base Drifts Down	A-13
Noisy Operation	A-14
Moves Slowly / Will Not Lift Patient	A-15
Up and/or Down Function	
Moves Briefly, Then Stops	A-16
Headrest Collides w/Floor	A-48

Base UP / DOWN Function

This illustration shows only the components that affect the Base UP / DOWN function. Refer to the following page for a detailed description of Base UP / DOWN operation.


Base Actuator
Hand Control
Foot Control
BK
WH
BK
WH
Choke
BK
WH
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
P12
J13
P13
J14
J15
Main PC Board
MA646400i
BK
WH
Main System Transformer
L
Power Light
RD
BN
BK
1
2
3
Base Sensor
GN
YL
OR
GN
COM
NC
NO
Base Up Limit Switch
COM
NC
NO
Base Down Limit Switch

Only the wires that affect the Base Function are shown.

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

(Midmark models only)

*[**Black & white wires** supply 48-54 VAC to power circuitry for the Base & Back actuators]*

Note: *On models w/ rotational base, the Main System Transformer connections are supplied thru the Rotational Base PC Board (not shown).*

Base UP / DOWN Function

Is There Power To The Table?
When voltage is present at the PC board, the power light is illuminated.
[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls
Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Base Up Operation

When the Base Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the base actuator motor.

The actuator motor runs and raises the table.

> **NOTE**
> The PC board continuously monitors the Base Up limit switch and the Base position sensor*.
>
> *If the Base Up limit switch is tripped (open), the Base Up function will not operate.*
>
> *If the Base position sensor* detects that the table has reached its upper limit, the Base Up function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Base Up limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Position Sensor* malfunction.
5. Overcurrent protection tripped.
6. Software time-out limit is reached *(approx. 25 seconds)*.

Base Down Operation

When the Base Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 40 VDC to the base actuator motor.

The actuator motor runs and lowers the table.

> **NOTE**
> The PC board continuously monitors the Base Down limit switch and the Base position sensor.
>
> *If the Base Down limit switch is tripped (open), the Base Down function will not operate.*
>
> *If the Base position sensor* detects that the table is in a potential "crash position", or that the base has reached its lower limit, the Base Down function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Base Down limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Crash Avoidance System* activated.
5. Position Sensor* malfunction.
6. Overcurrent protection tripped.
7. Software time-out limit is reached *(approx. 25 seconds)*.

---

* Midmark models only.
[This feature is not available on Ritter models]

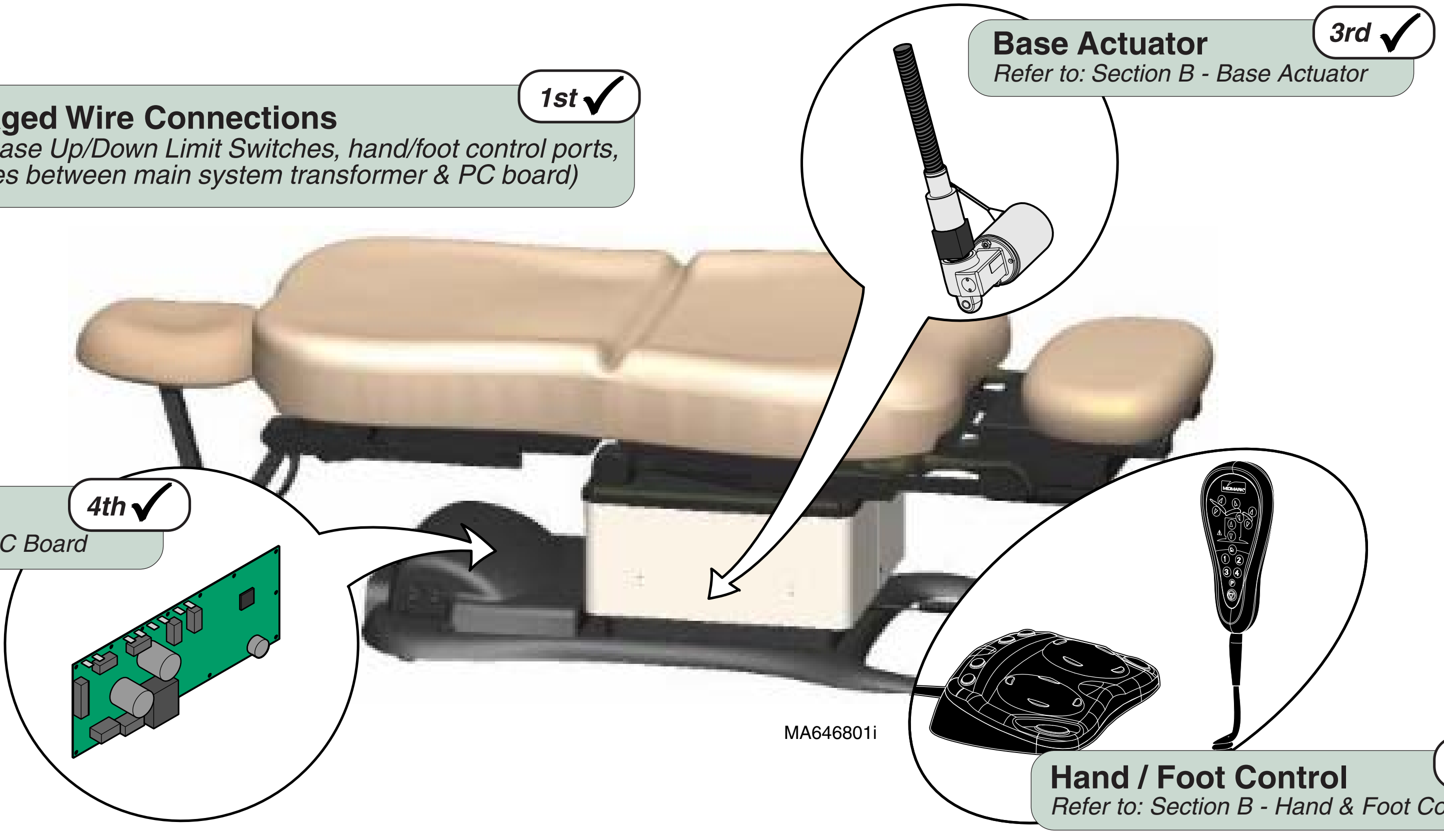
Back
Go To Table Of Contents
Next

Base Up / Down Function - continued

Problem: *No Base Up or Base Down*

Refer To: **Go To Page:**

Limit Switches B-4
Hand & Foot Controls B-6
Base Actuator B-11
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections *1st ✓*
(Base Actuator, Base Up/Down Limit Switches, hand/foot control ports, black & white wires between main system transformer & PC board)

Hand / Foot Control *2nd ✓*
Refer to: Section B - Hand & Foot Controls

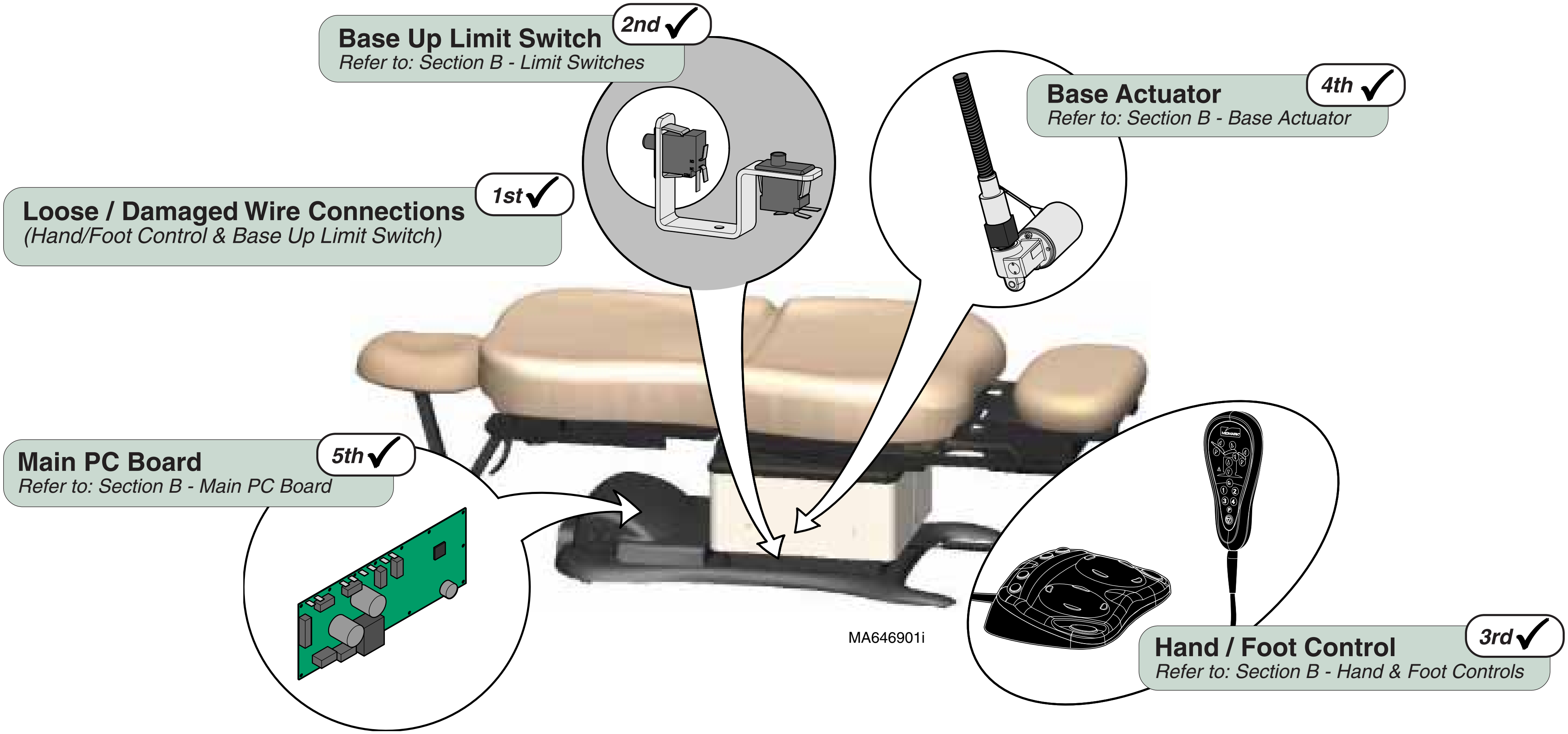
Base Actuator *3rd ✓*
Refer to: Section B - Base Actuator

Main PC Board *4th ✓*
Refer to: Section B - Main PC Board

Base Up / Down Function - *continued*

Problem: *No Base Up.*
Base Down - OK.

Refer To: **Go To Page:**
Limit Switches B-3
Hand & Foot Controls B-6
Base Actuator B-11
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓ **Loose / Damaged Wire Connections**
(Hand/Foot Control & Base Up Limit Switch)

2nd ✓ **Base Up Limit Switch**
Refer to: Section B - Limit Switches

3rd ✓ **Hand / Foot Control**
Refer to: Section B - Hand & Foot Controls

4th ✓ **Base Actuator**
Refer to: Section B - Base Actuator

5th ✓ **Main PC Board**
Refer to: Section B - Main PC Board

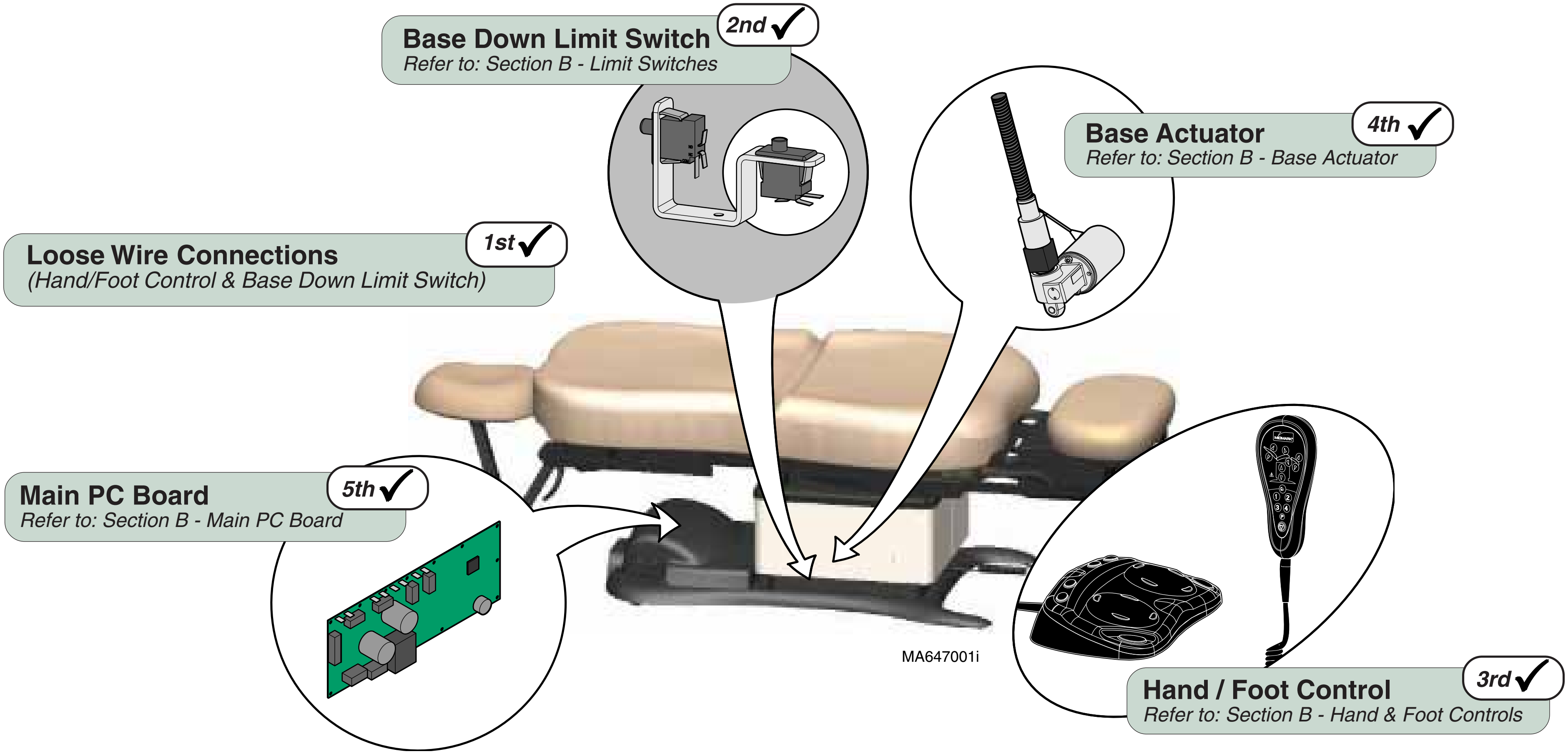
Base Up / Down Function - continued

Problem: No Base Down.
Base Up - OK.

[All other table functions - OK]

Refer To:
Go To Page:

Limit Switches B-3
Hand & Foot Controls B-6
Base Actuator B-11
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose Wire Connections 1st ✓
(Hand/Foot Control & Base Down Limit Switch)

Base Down Limit Switch 2nd ✓
Refer to: Section B - Limit Switches

Hand / Foot Control 3rd ✓
Refer to: Section B - Hand & Foot Controls

Base Actuator 4th ✓
Refer to: Section B - Base Actuator

Main PC Board 5th ✓
Refer to: Section B - Main PC Board

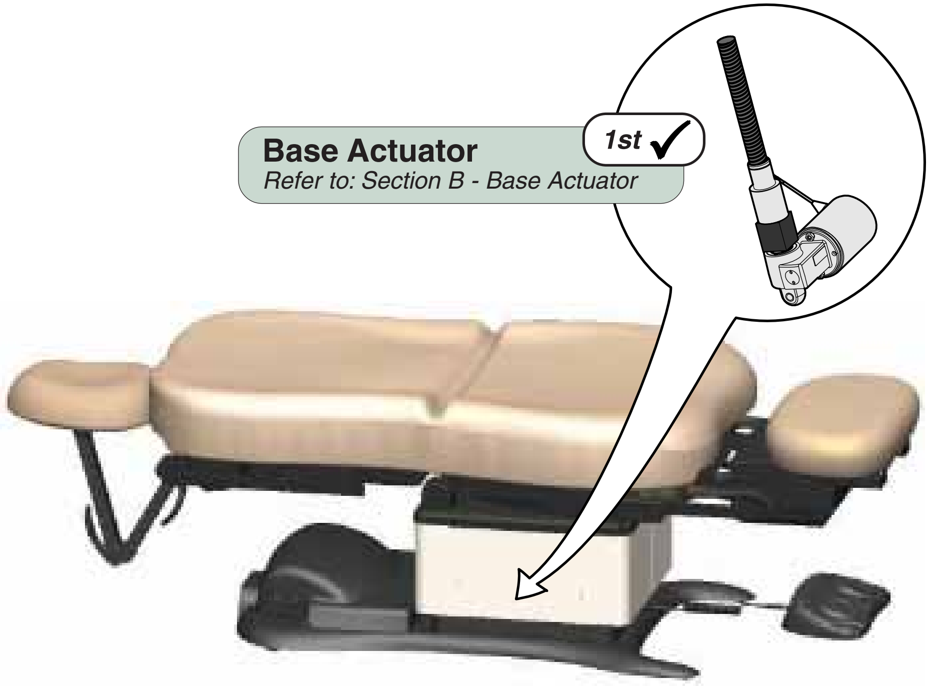
Base Up / Down Function *- continued*

Problem: *Base drifts down.*

Refer To: **Go To Page:**

Base Actuator B-11
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Base Actuator *1st* ✓
Refer to: Section B - Base Actuator



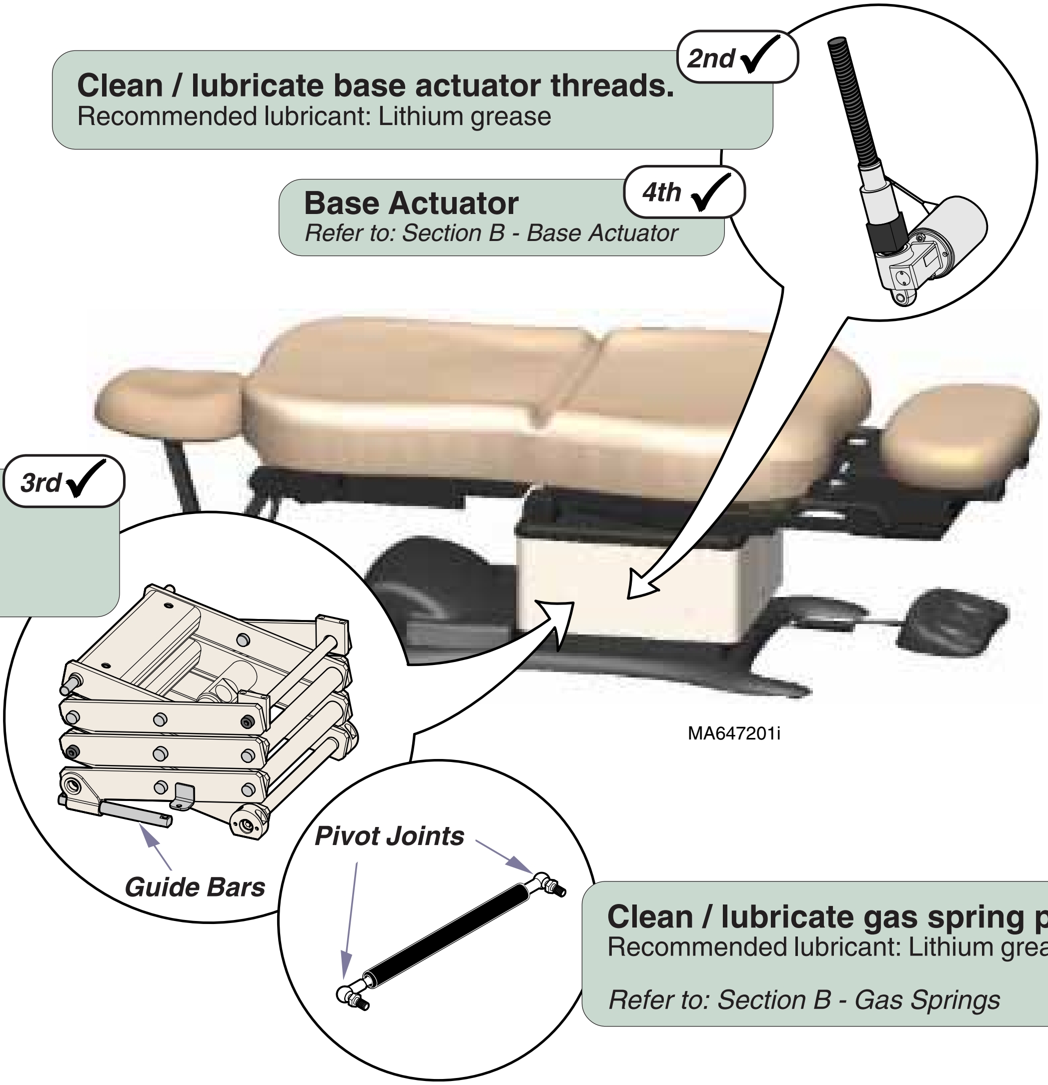
MA647101i

Base Up / Down Function - continued

Problem: Noisy operation. (Grinding, squeaking, etc)

Refer To: **Go To Page:**

Base Actuator B-11
Gas Springs B-28
Base Shroud Removal C-5
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓ **Clean / lubricate gas spring pivot joints**
Recommended lubricant: Lithium grease

Refer to: Section B - Gas Springs

2nd ✓ **Clean / lubricate base actuator threads.**
Recommended lubricant: Lithium grease

3rd ✓ **Wipe guide bars with a clean, dry cloth.**
NEVER lubricate base slides / scissor mechanism.

Refer to: Section C - Base Shoud Removal

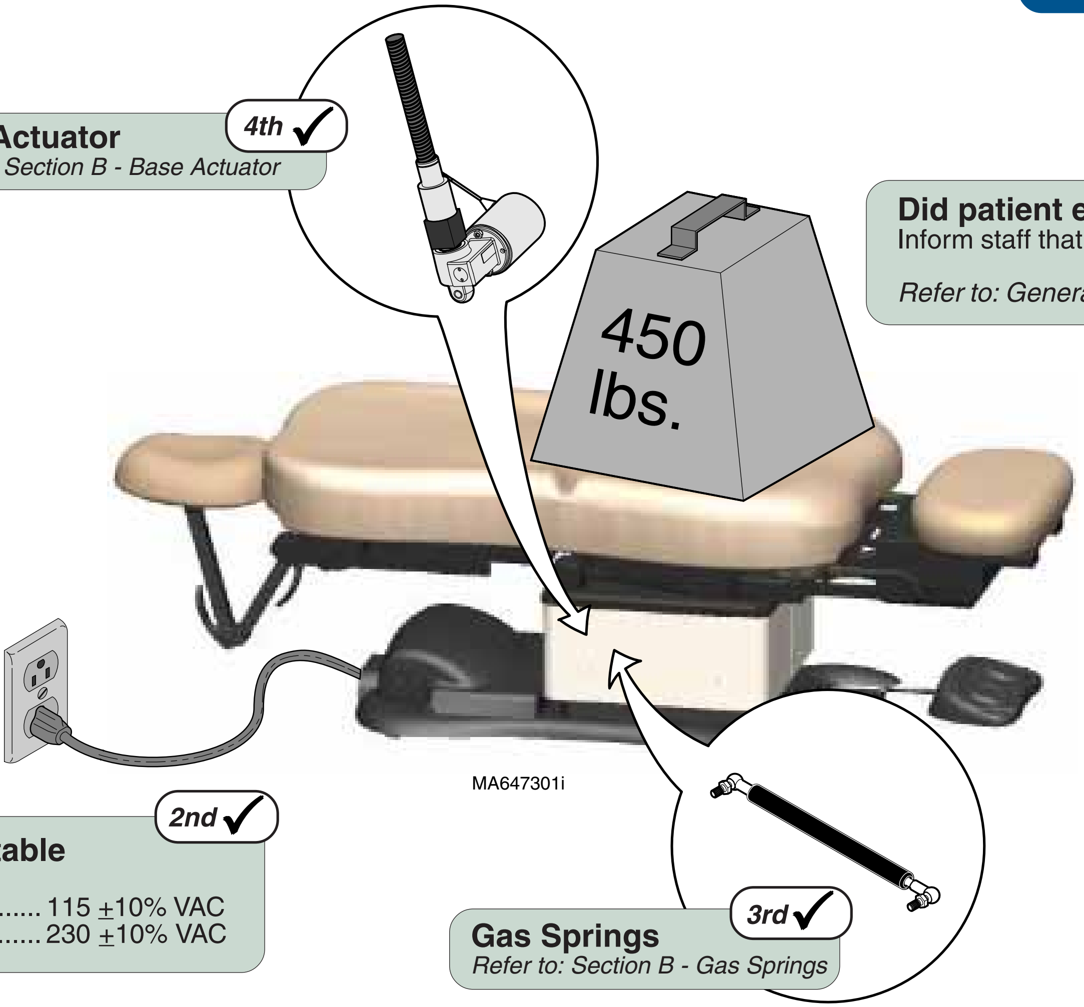
4th ✓ **Base Actuator**
Refer to: Section B - Base Actuator

Base Up / Down Function - continued

Problem: *Moves slowly - **and/or***
Will not lift patient.

Refer To: **Go To Page:**

General Information *(Specifications)*..... ii
Base Actuator B-11
Gas Springs B-28
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓

Did patient exceed 450 lb. weight limit?
Inform staff that max. patient weight is 450 lbs.

Refer to: General InformationSection

2nd ✓

Low voltage to table
Required voltage:
115 VAC setting .... 115 ±10% VAC
230 VAC setting .... 230 ±10% VAC

3rd ✓

Gas Springs
Refer to: Section B - Gas Springs

4th ✓

Base Actuator
Refer to: Section B - Base Actuator

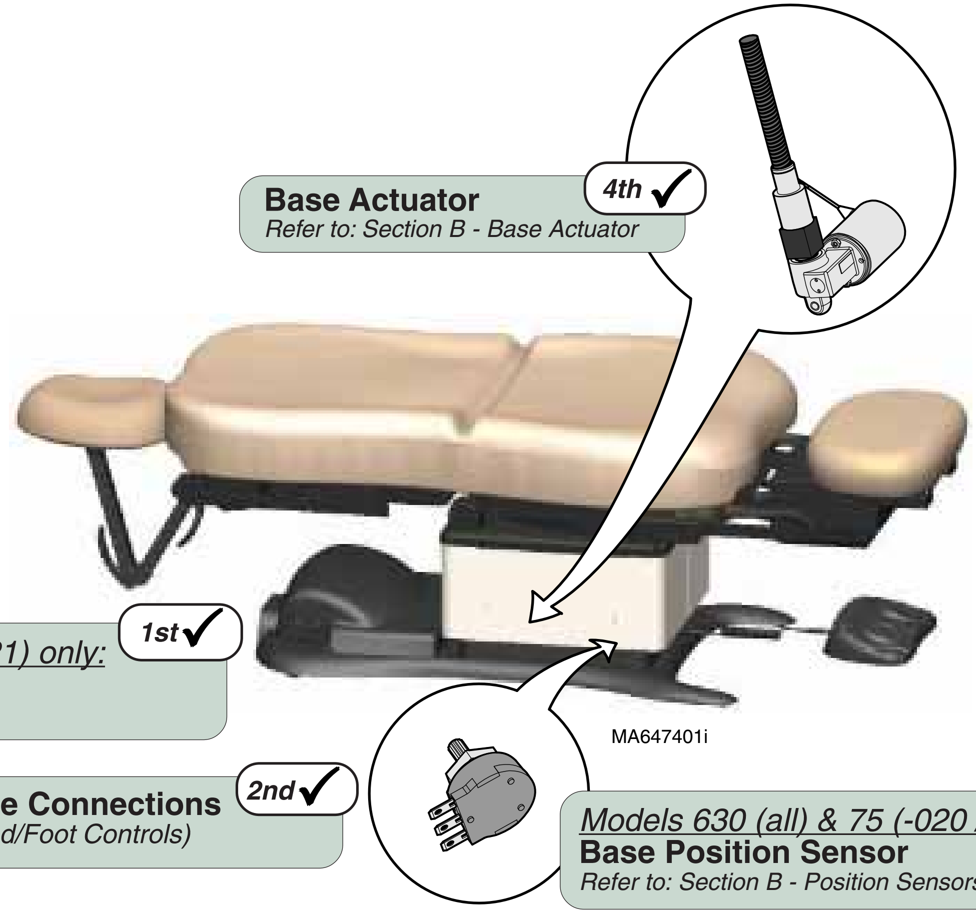
Operation & Troubleshooting

Base Up / Down Function - continued

Problem: *Base Up* ***and/or*** *Base Down moves briefly, then stops ("beeps").*

Refer To: **Go To Page:**

Base Actuator B-11
Position Sensors B-32
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



4th ✓ **Base Actuator**
Refer to: Section B - Base Actuator

1st ✓ *Models 630 (all) & 75 (-020 /-021) only:*
Calibrate PC Board
Refer to: Section B - Main PC Board

2nd ✓ **Loose / Damaged Wire Connections**
(Base Position Sensor, Hand/Foot Controls)

3rd ✓ *Models 630 (all) & 75 (-020 /-021) only:*
Base Position Sensor
Refer to: Section B - Position Sensors

This page intentionally blank.

Back
Go To Table Of Contents
Next

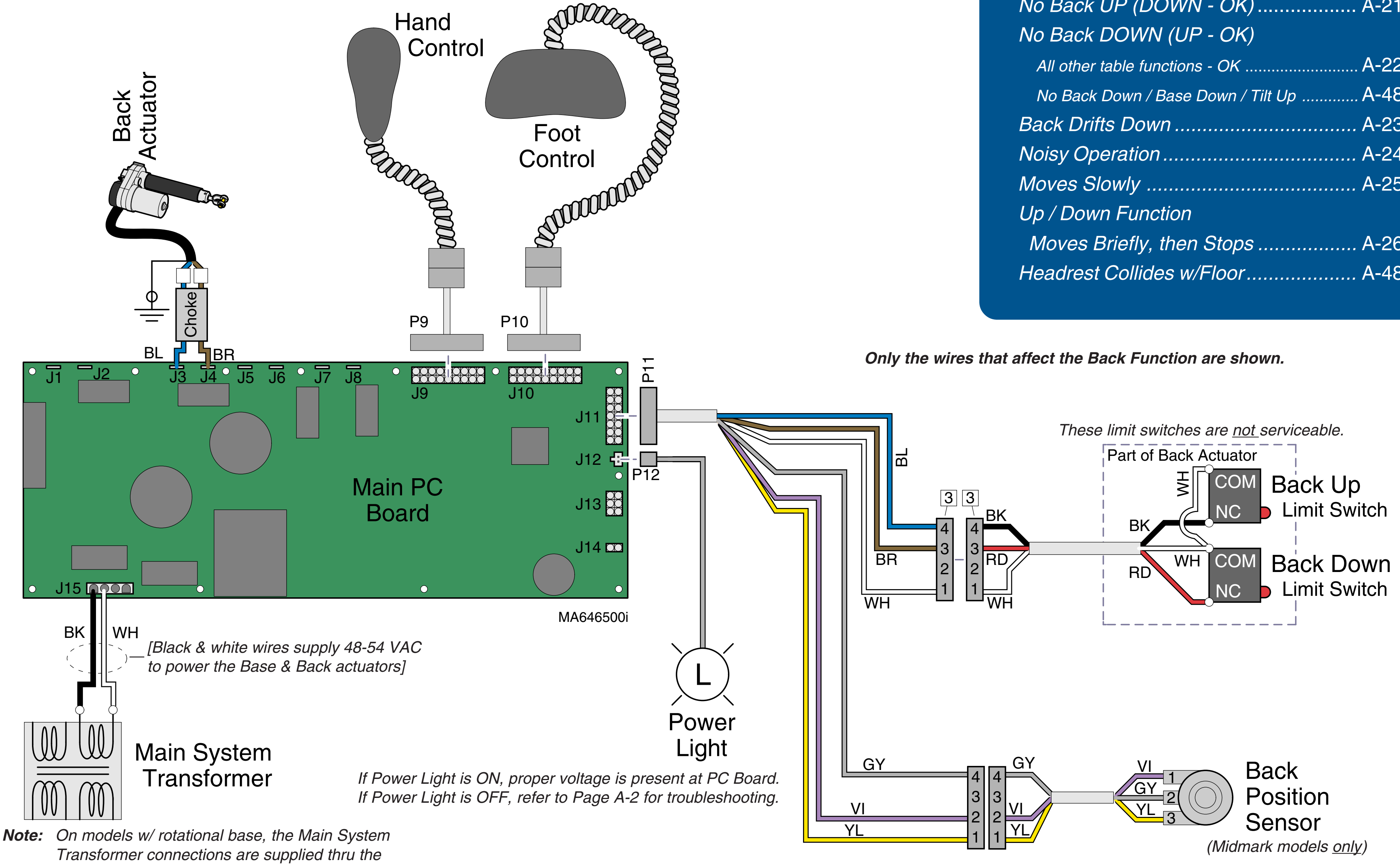
Back UP / DOWN Function

This illustration shows only the components that affect the Back UP / DOWN function.
Refer to the following page for a detailed description of Back UP / DOWN operation.

Troubleshooting
[Back Up / Down Function]

Go To Page:

Problem
No Back UP or DOWN A-20
No Back UP (DOWN - OK) A-21
No Back DOWN (UP - OK)
All other table functions - OK A-22
No Back Down / Base Down / Tilt Up A-48
Back Drifts Down A-23
Noisy Operation A-24
Moves Slowly A-25
Up / Down Function
Moves Briefly, then Stops A-26
Headrest Collides w/Floor A-48


Hand Control
Foot Control
Back Actuator
Choke
BL
BR
J1
J2
J3
J4
J5
J6
J7
J8
P9
P10
J9
J10
P11
J11
J12
P12
J13
J14
J15
Main PC Board
MA646500i
BK
WH
Main System Transformer
L
Power Light
BL
BR
WH
3
3
4
3
2
1
BK
RD
WH
Part of Back Actuator
WH
BK
RD
WH
COM
NC
Back Up Limit Switch
COM
NC
Back Down Limit Switch
GY
VI
YL
4
3
2
1
GY
VI
YL
VI
GY
YL
1
2
3
Back Position Sensor

Only the wires that affect the Back Function are shown.

These limit switches are not serviceable.

[Black & white wires supply 48-54 VAC to power the Base & Back actuators]

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

(*Midmark models only*)

Note: *On models w/ rotational base, the Main System Transformer connections are supplied thru the Rotational Base PC Board (not shown).*

Back UP / DOWN Function

Is There Power To The Table?
When voltage is present at the PC board, the power light is illuminated.
[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls
Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Back Up Operation

When the Back Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the back actuator motor.

The actuator motor runs and raises the back section.

NOTE
The PC board continuously monitors the Back Up limit switch *(mounted inside the actuator)* and the Back position sensor*.

If the Back Up limit switch is tripped (open), the Back Up function will not operate.

If the Back position sensor detects that the back section has reached its upper limit, the Back Up function will not operate.

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Back Up limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Position Sensor* malfunction.
5. Overcurrent protection tripped.
6. Software time-out limit is reached *(approx. 30 seconds)*.

Back Down Operation

When the Back Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 44 VDC to the back actuator motor.

The actuator motor runs and lowers the back section.

NOTE
The PC board continuously monitors the Back Down limit switch *(mounted inside the actuator)* and the Back position sensor*.

If the Back Down limit switch is tripped (open), the Back Down function will not operate.

If the Back position sensor detects that the table is in a potential "crash position", or that the back section has reached its lower limit, the Back Down function will not operate.

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Back Down limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Crash Avoidance System* activated.
5. Position Sensor* malfunction.
6. Overcurrent protection tripped.
7. Software time-out limit is reached *(approx. 30 seconds)*.

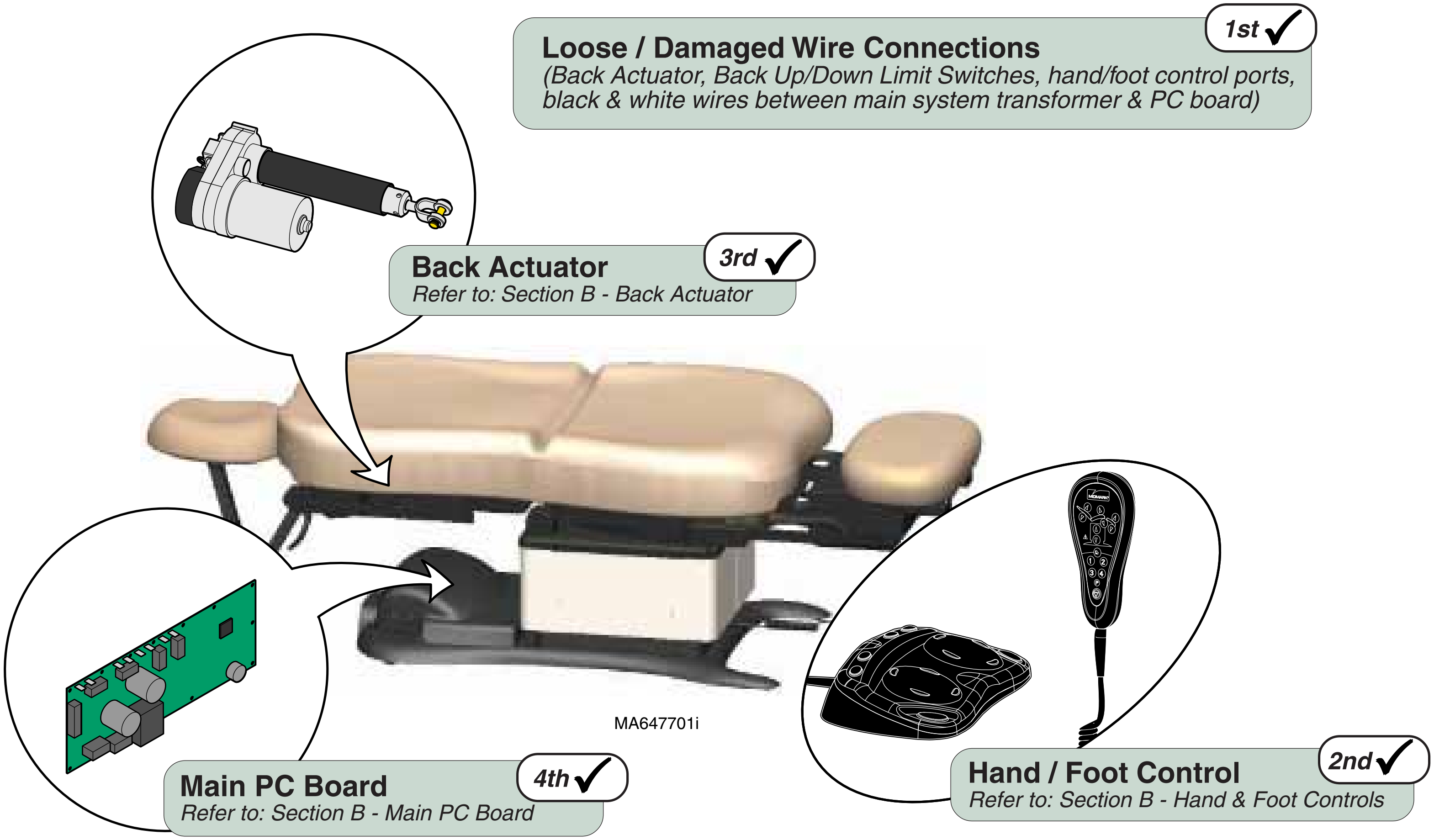
---

* Midmark models only.
[This feature is not available on Ritter models]

Back Up / Down Function - continued

Problem: *No Back Up or Back Down.*

Refer To:
Go To Page:
Hand & Foot Controls B-6
Back Actuator B-17
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections *1st ✓*
(Back Actuator, Back Up/Down Limit Switches, hand/foot control ports, black & white wires between main system transformer & PC board)

Hand / Foot Control *2nd ✓*
Refer to: Section B - Hand & Foot Controls

Back Actuator *3rd ✓*
Refer to: Section B - Back Actuator

Main PC Board *4th ✓*
Refer to: Section B - Main PC Board

Back

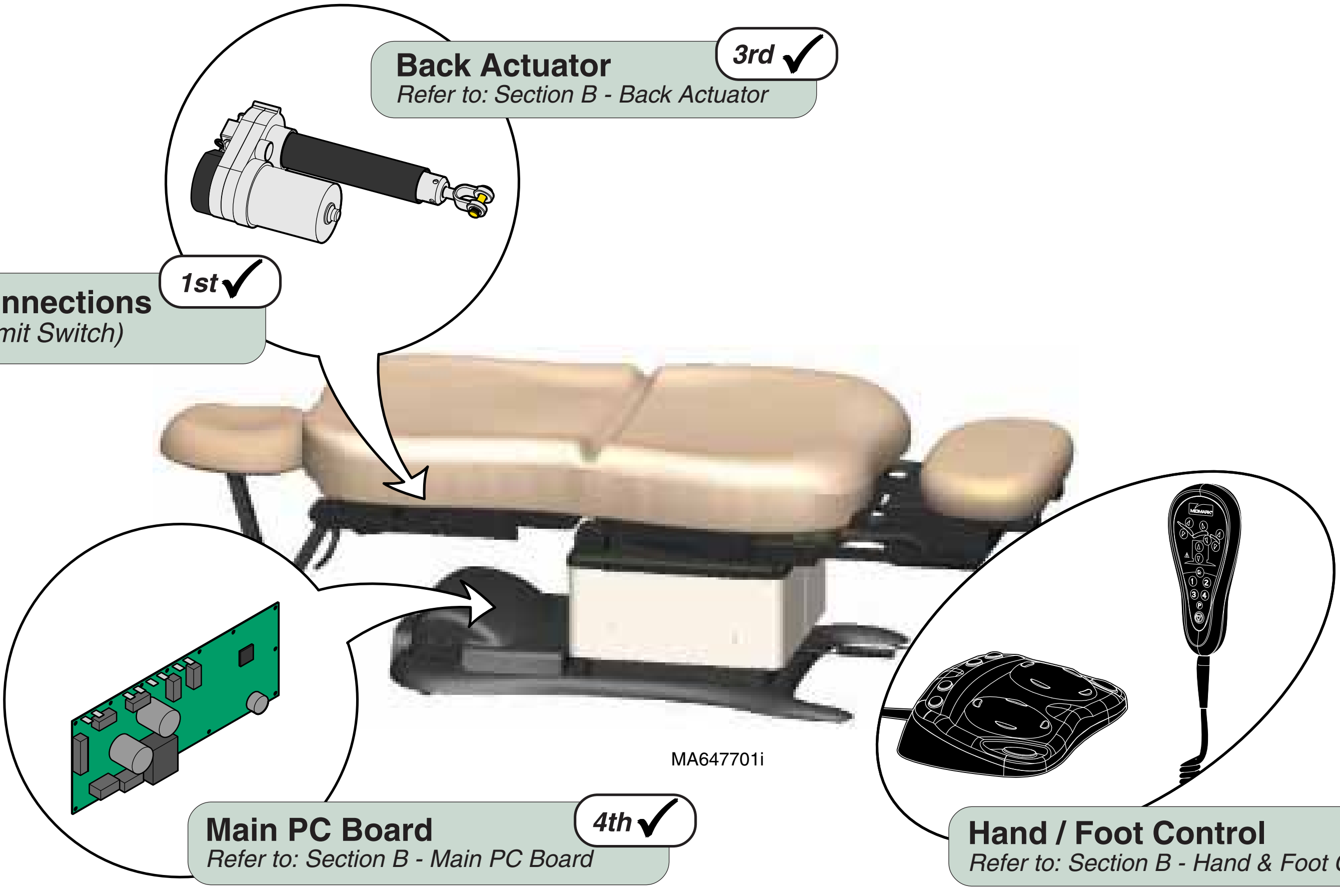
Go To Table Of Contents

Next

Back Up / Down Function - continued

Problem: No Back Up.
Back Down - OK.

Refer To:	Go To Page:
Hand & Foot Controls	B-6
Back Actuator	B-17
Main PC Board	B-40
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Loose / Damaged Wire Connections 1st ✓
(Hand/Foot Control & Back Up Limit Switch)

Hand / Foot Control 2nd ✓
Refer to: Section B - Hand & Foot Controls

Back Actuator 3rd ✓
Refer to: Section B - Back Actuator

Main PC Board 4th ✓
Refer to: Section B - Main PC Board

Models: ALL
Serial Numbers:

Back
Go To Table Of Contents
Next

Back Up / Down Function - continued

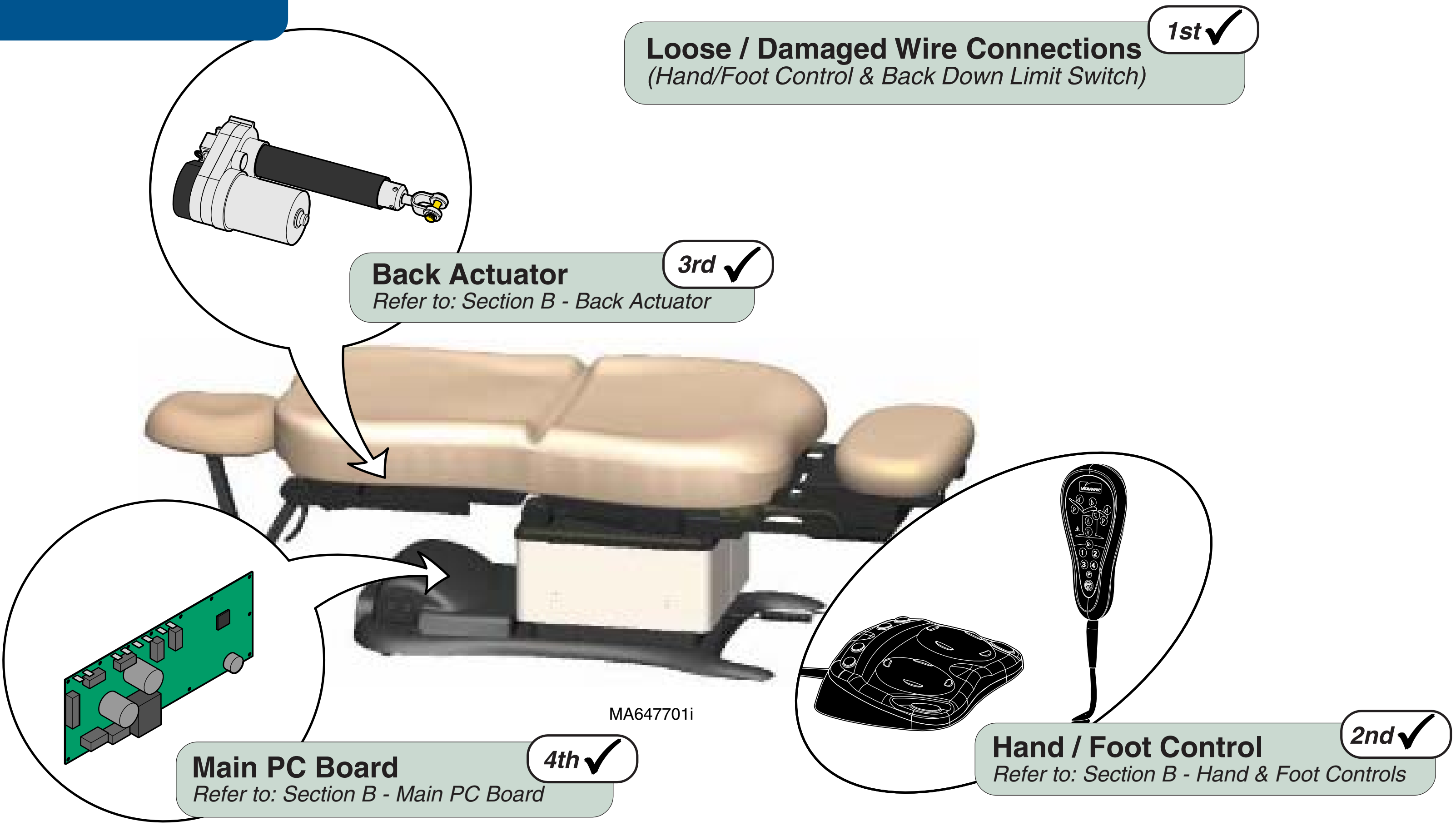
Problem: No Back Down.
Back Up - OK.

[All other table functions - OK]

Refer To:

Go To Page:

Limit Switches B-4
Hand & Foot Controls B-6
Back Actuator B-17
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections 1st ✓
(Hand/Foot Control & Back Down Limit Switch)

Hand / Foot Control 2nd ✓
Refer to: Section B - Hand & Foot Controls

Back Actuator 3rd ✓
Refer to: Section B - Back Actuator

Main PC Board 4th ✓
Refer to: Section B - Main PC Board

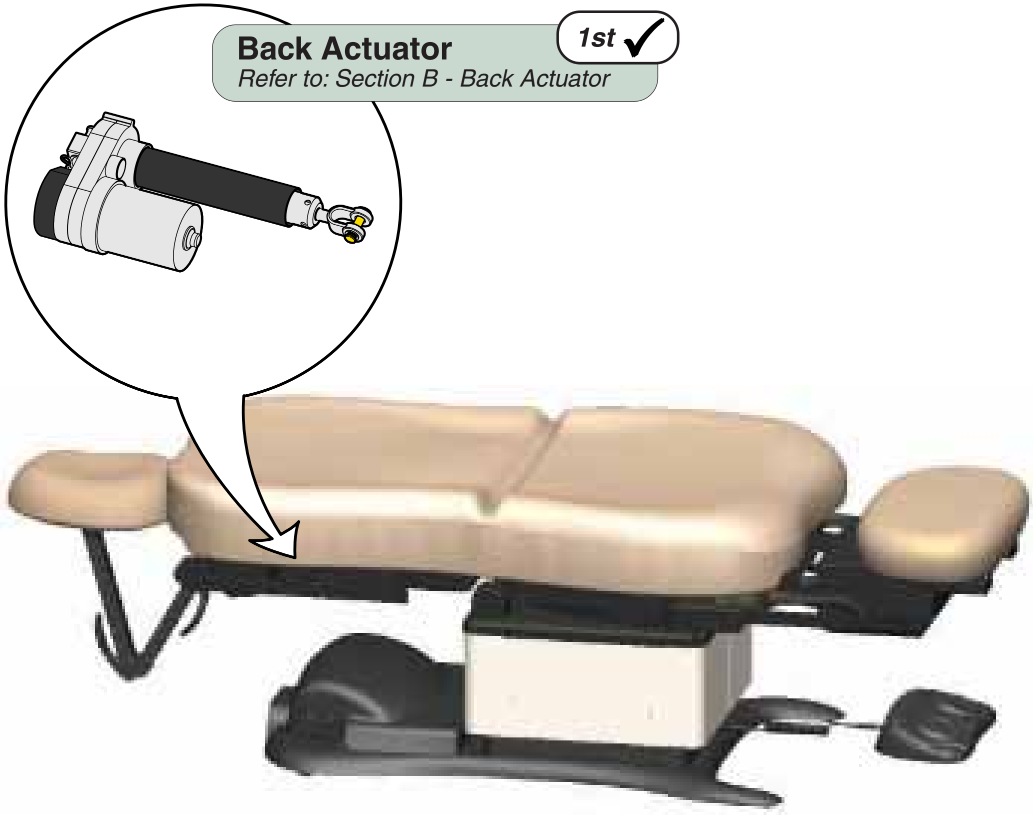
Models: ALL
Serial Numbers:

Back Up / Down Function - *continued*

Problem: *Back drifts down.*

Refer To: Go To Page:

Back Actuator B-17
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Back Actuator *1st* ✓

Refer to: Section B - Back Actuator

MA647801i

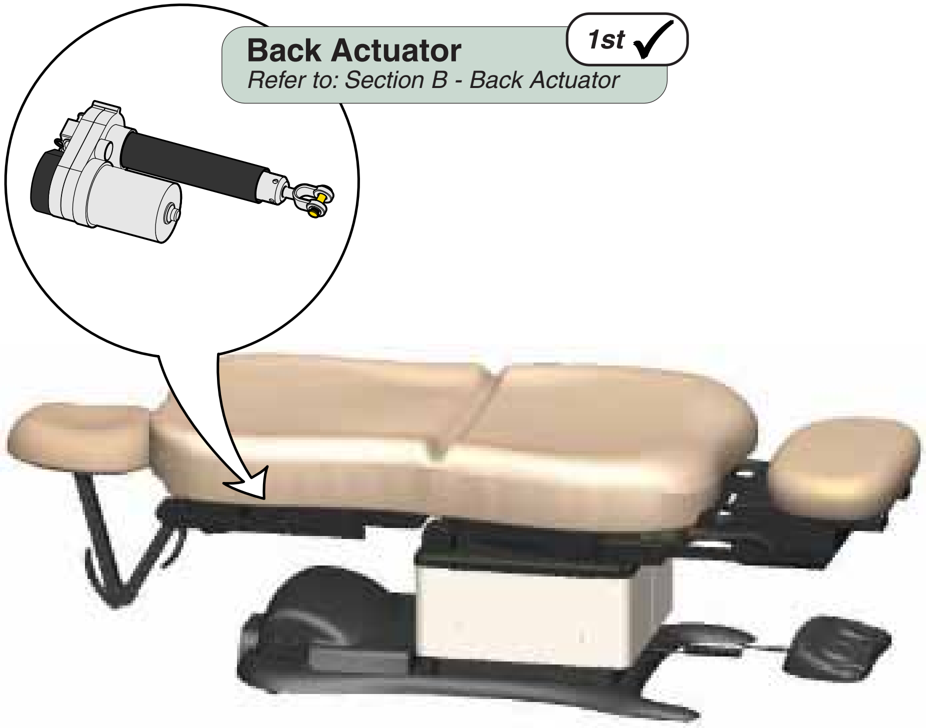
Models: ***ALL***

Serial Numbers:

Back Up / Down Function - *continued*

Problem: *Noisy operation.*
(Grinding, squeaking, etc)

Refer To:	**Go To Page:**
Back Actuator	B-17
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1


Back Actuator
Refer to: Section B - Back Actuator
1st ✓
MA647801i

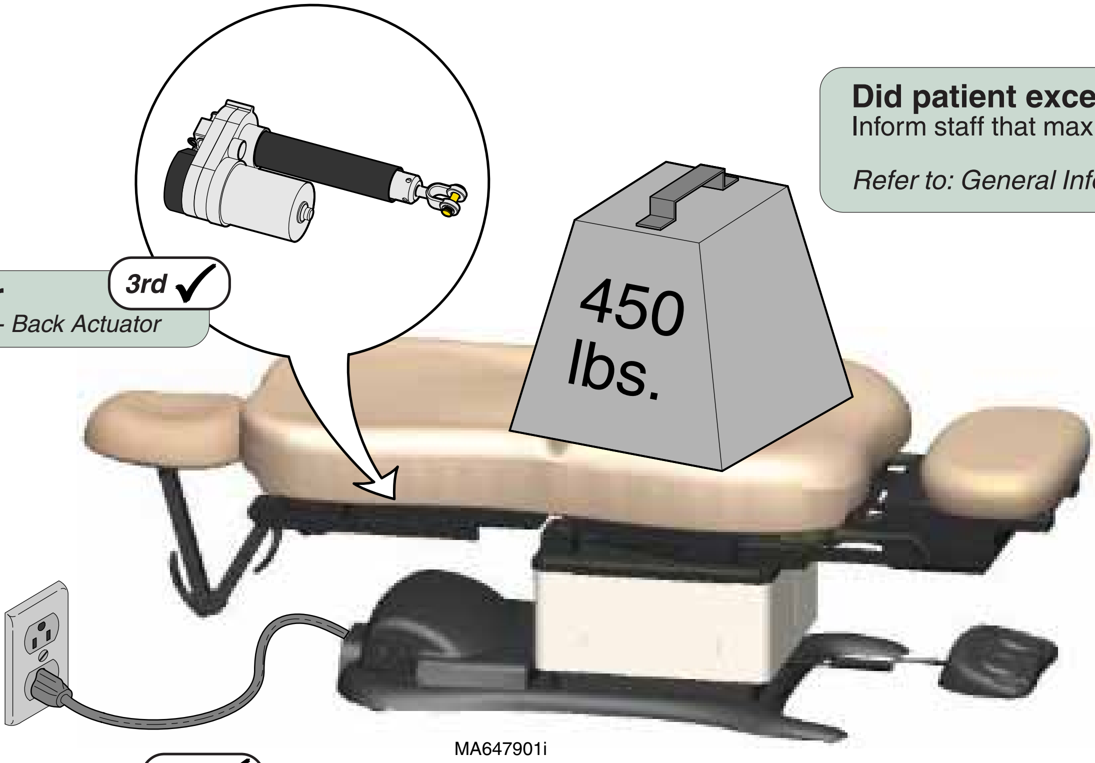
Operation & Troubleshooting

Back Up / Down Function - *continued*

Problem: *Moves slowly* - ***and/or***
Will not lift patient.

Refer To: **Go To Page:**

General Information *(Specifications)*..... ii
Back Actuator B-17
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓

Did patient exceed 450 lb. weight limit?
Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section

2nd ✓

Low voltage to table
Required voltage:
115 VAC setting .... 115 ±10% VAC
230 VAC setting .... 230 ±10% VAC

3rd ✓

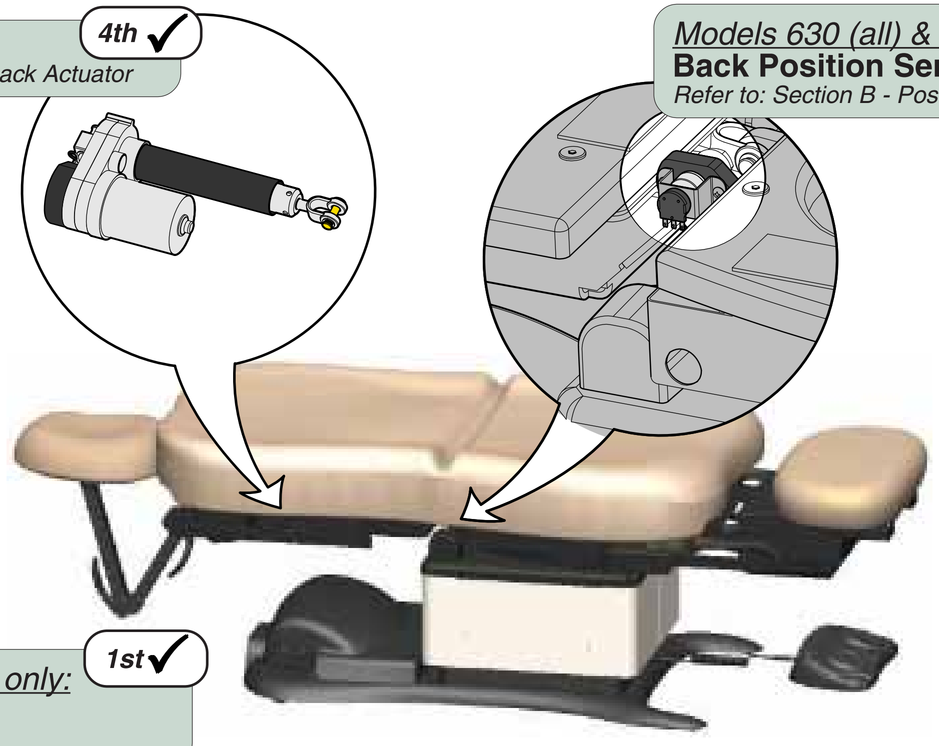
Back Actuator
Refer to: Section B - Back Actuator

Models: ***Serial Numbers:*** ***ALL***

Back Up / Down Function - *continued*

Problem: *Back Up **and/or** Back Down moves briefly, then stops ("beeps").*

Refer To: Go To Page:
Back Actuator B-17
Position Sensors B-32
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓
Models 630 (all) & 75 (-020 /-021) only:
Calibrate PC Board
Refer to: Section B - Main PC Board

2nd ✓
Loose / Damaged Wire Connections
(Back Position Sensor, Hand/Foot Controls)

3rd ✓
Models 630 (all) & 75 (-020 /-021) only:
Back Position Sensor
Refer to: Section B - Position Sensors

4th ✓
Back Actuator
Refer to: Section B - Back Actuator

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Go To Table Of Contents
Next

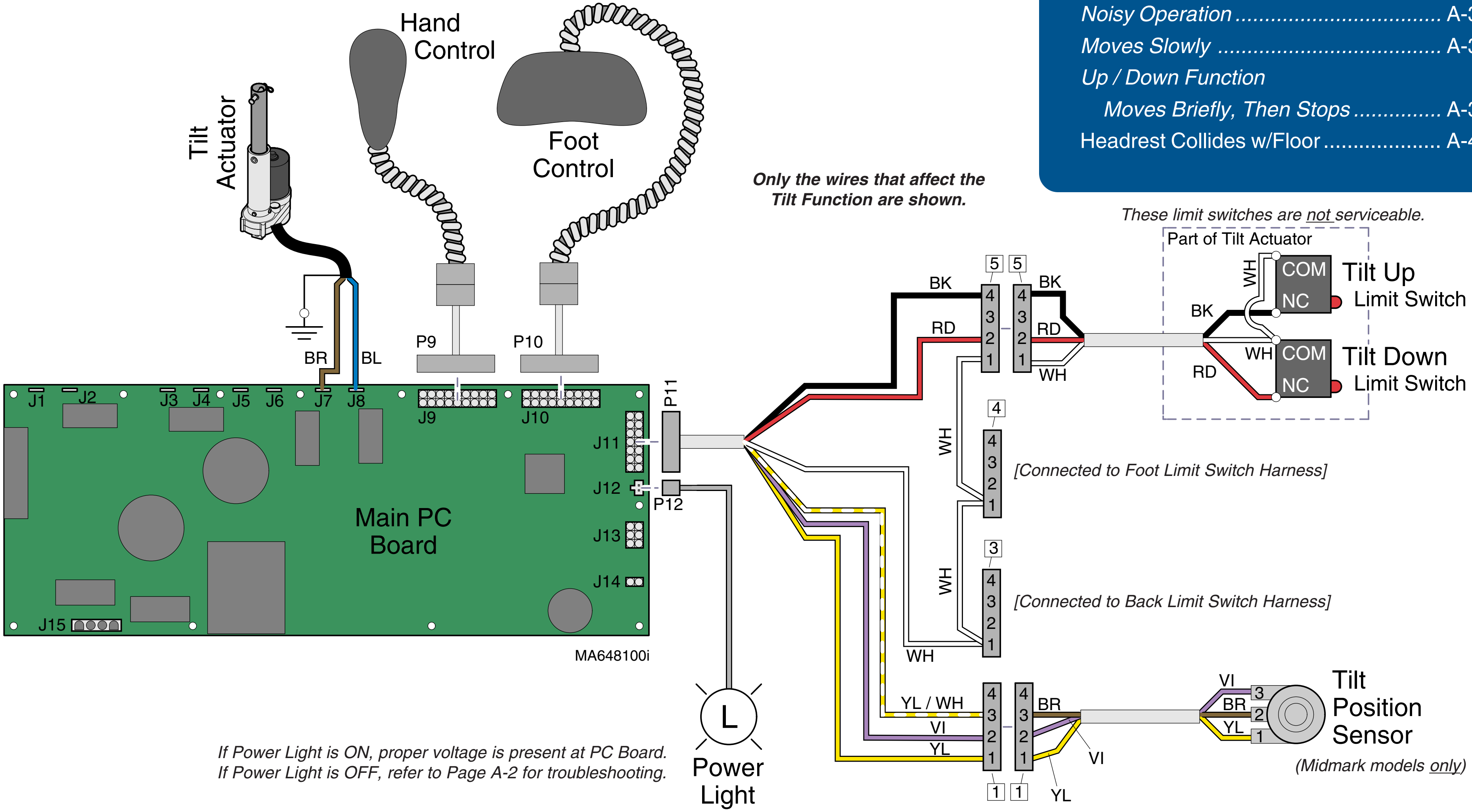
Tilt UP / DOWN Function

This illustration shows only the components that affect the Tilt UP / DOWN function. Refer to the following page for a detailed description of Tilt UP / DOWN operation.

Troubleshooting
[Tilt Up / Down Function]

Problem — ***Go To Page:***

No Tilt UP or DOWN A-30
No Tilt DOWN (UP - OK) A-31
No Tilt UP (DOWN - OK)
All other table functions - OK A-32
No Tilt Up / Base Down / Back Down A-48
Seat Drifts Down A-33
Noisy Operation A-34
Moves Slowly A-35
Up / Down Function
Moves Briefly, Then Stops A-36
Headrest Collides w/Floor A-48


Tilt Actuator
Hand Control
Foot Control
BR
BL
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
Main PC Board
MA648100i
BK
RD
WH
5
4
3
2
1
Part of Tilt Actuator
COM
NC
Tilt Up Limit Switch
Tilt Down Limit Switch
[Connected to Foot Limit Switch Harness]
[Connected to Back Limit Switch Harness]
YL / WH
VI
YL
Tilt Position Sensor
(Midmark models only)
L
Power Light

Only the wires that affect the Tilt Function are shown.

These limit switches are not serviceable.

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

Tilt UP / DOWN Function

Is There Power To The Table?
When voltage is present at the PC board, the power light is illuminated.
[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls
Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Tilt Up Operation

When the Tilt Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the tilt actuator motor.

The actuator motor runs and reclines the seat section.

NOTE
The PC board continuously monitors the Tilt Up limit switch *(mounted inside the actuator)* and the Tilt position sensor*.

If the Tilt Up limit switch is tripped (open), the Tilt Up function will not operate.

If the Tilt position sensor detects that the table is in a potential "crash position", or that the seat section has reached its upper limit, the Tilt Up function will not operate.

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Tilt Up limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Crash Avoidance System* activated.
5. Position Sensor* malfunction.
6. Overcurrent protection tripped.
7. Software time-out limit is reached. *(approx. 30 seconds).*

Tilt Down Operation

When the Tilt Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the tilt actuator motor.

The actuator motor runs and brings the seat section back to a flat position.

NOTE
The PC board continuously monitors the Tilt Down limit switch *(mounted inside the actuator)* and the Tilt position sensor*.

If the Tilt Down limit switch is tripped (open), the Tilt Down function will not operate.

If the Tilt position sensor detects that the seat section has reached its lower limit, the Tilt Down function will not operate.

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Tilt Down limit switch is tripped.
3. Emergency Stop button* is pressed.
4. Position Sensor* malfunction.
5. Overcurrent protection tripped.
6. Software time-out limit is reached *(approx. 30 seconds).*

---

* Midmark models only.
[This feature is not available on Ritter models]

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Next

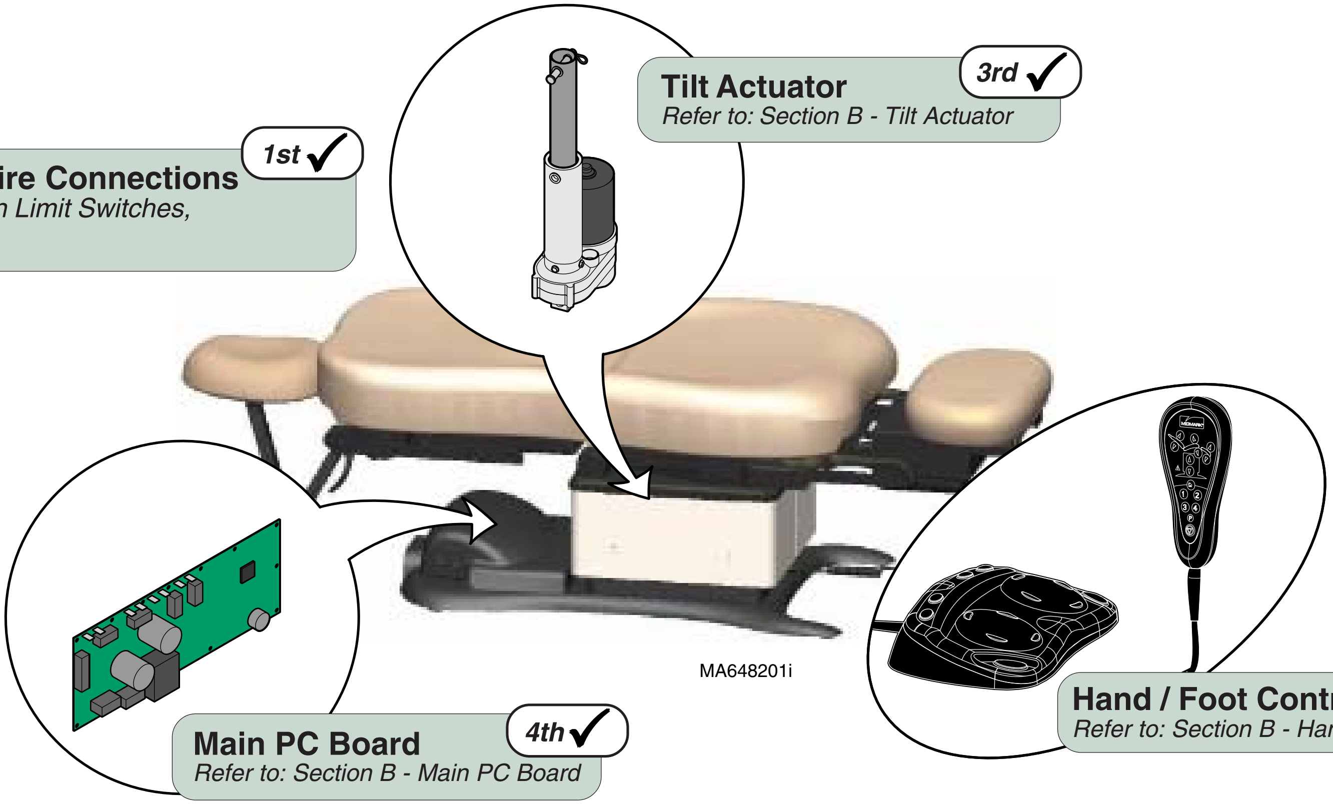
Tilt Up / Down Function - *continued*

Problem: *No Tilt Up or Tilt Down.*

Refer To:

Go To Page:

Limit Switches B-4
Hand & Foot Controls B-6
Tilt Actuator B-21
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections *1st* ✓
(Tilt Actuator, Tilt Up/Down Limit Switches,
& hand/foot control ports)

Tilt Actuator *3rd* ✓
Refer to: Section B - Tilt Actuator

Hand / Foot Control *2nd* ✓
Refer to: Section B - Hand & Foot Controls

Main PC Board *4th* ✓
Refer to: Section B - Main PC Board

MA648201i

Tilt Up / Down

Models: ***ALL***
Serial Numbers:

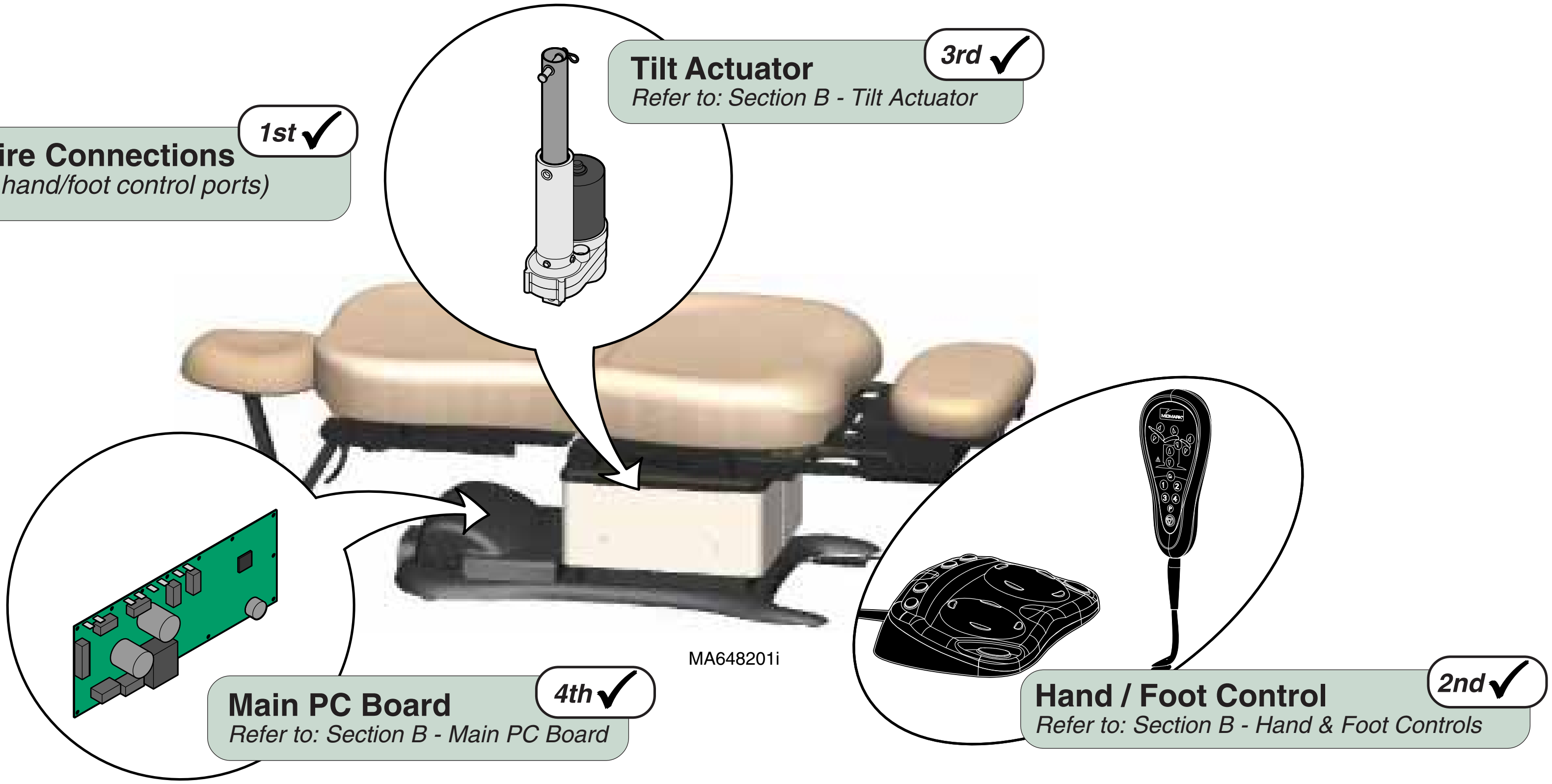
Tilt Up / Down Function - *continued*

Problem: *No Tilt Down.*
Tilt Up - OK.

Refer To:

Go To Page:

Hand & Foot Controls B-6
Tilt Actuator B-21
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections *1st* ✓
(Tilt Down Limit Switch, & hand/foot control ports)

Tilt Actuator *3rd* ✓
Refer to: Section B - Tilt Actuator

Main PC Board *4th* ✓
Refer to: Section B - Main PC Board

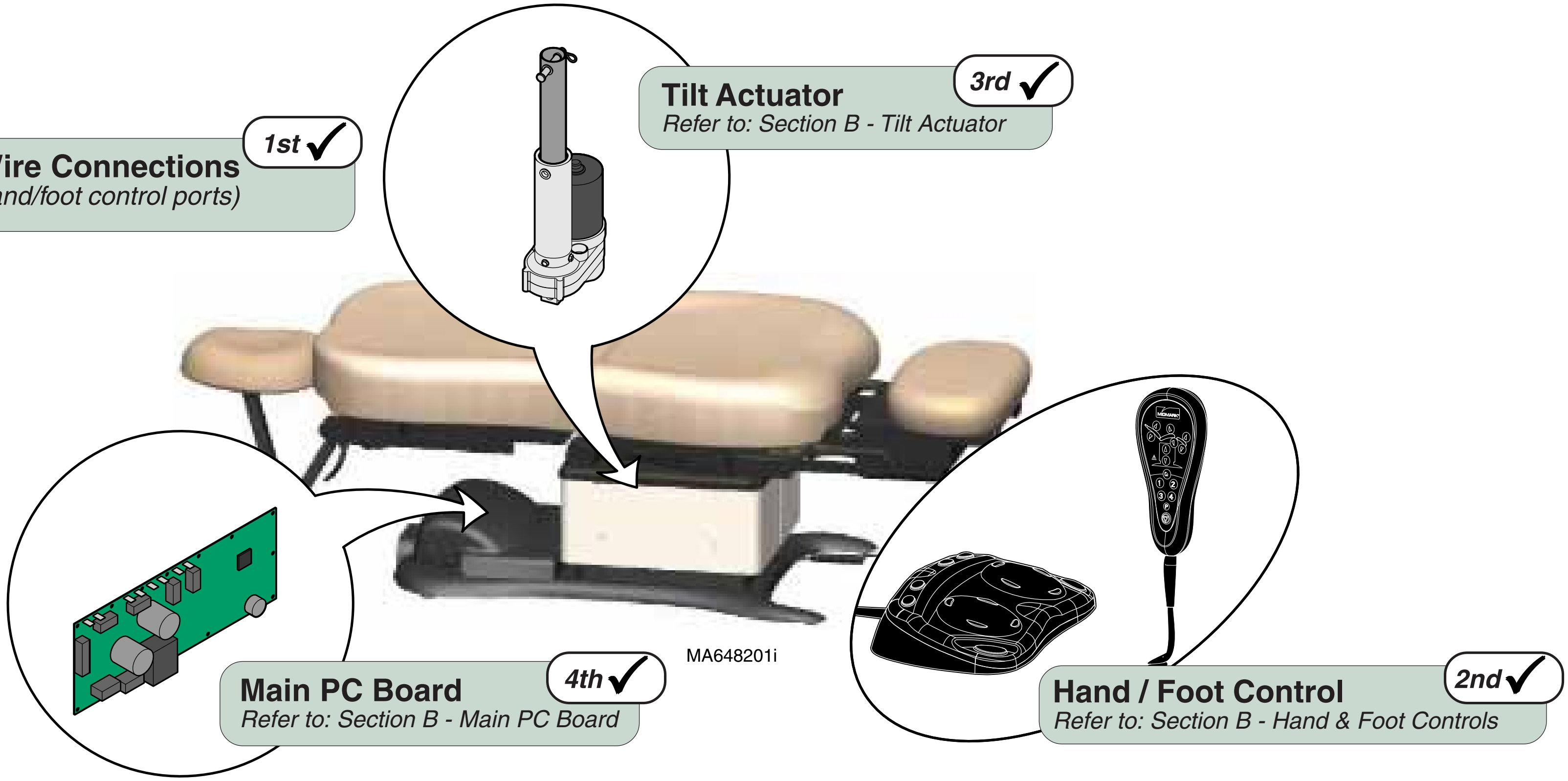
Hand / Foot Control *2nd* ✓
Refer to: Section B - Hand & Foot Controls

Refer To: **Go To Page:**
Hand & Foot Controls B-6
Tilt Actuator B-21
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Tilt Up / Down Function - *continued*

Problem: *No Tilt Up.*
Tilt Down - OK.

[All other table functions - OK]



Loose / Damaged Wire Connections *1st* ✓
(Tilt Up Limit Switch, & hand/foot control ports)

Hand / Foot Control *2nd* ✓
Refer to: Section B - Hand & Foot Controls

Tilt Actuator *3rd* ✓
Refer to: Section B - Tilt Actuator

Main PC Board *4th* ✓
Refer to: Section B - Main PC Board

Back

Go To Table Of Contents

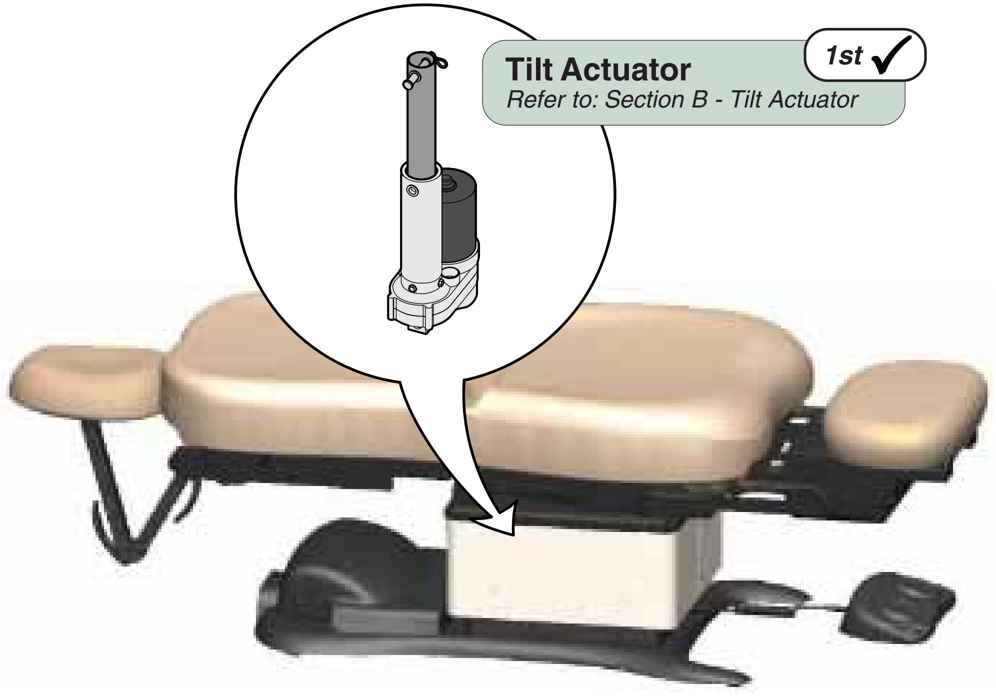
Next

Tilt Up / Down Function - *continued*

Problem: *Seat drifts down.*

Refer To: | **Go To Page:**

Tilt Actuator B-21
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Tilt Actuator *1st* ✓

Refer to: Section B - Tilt Actuator

MA647601i

Back

Go To Table Of Contents

Next

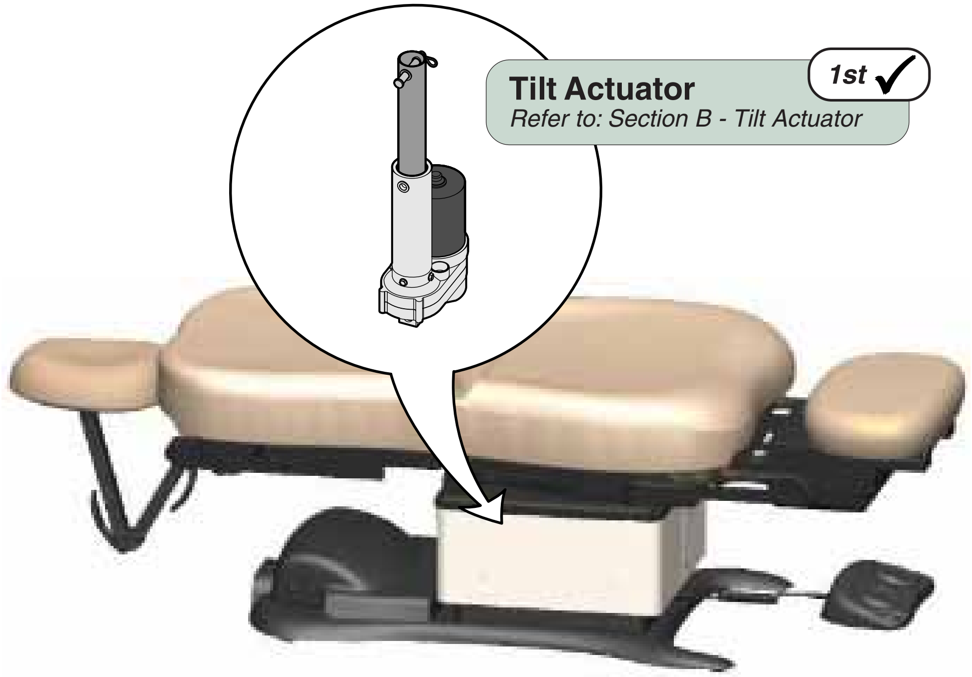
Refer To:

Go To Page:

Tilt Actuator	B-21
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Tilt Up / Down Function - *continued*

Problem: *Noisy operation.*
(Grinding, squeaking, etc)



Tilt Actuator
Refer to: Section B - Tilt Actuator

1st ✓

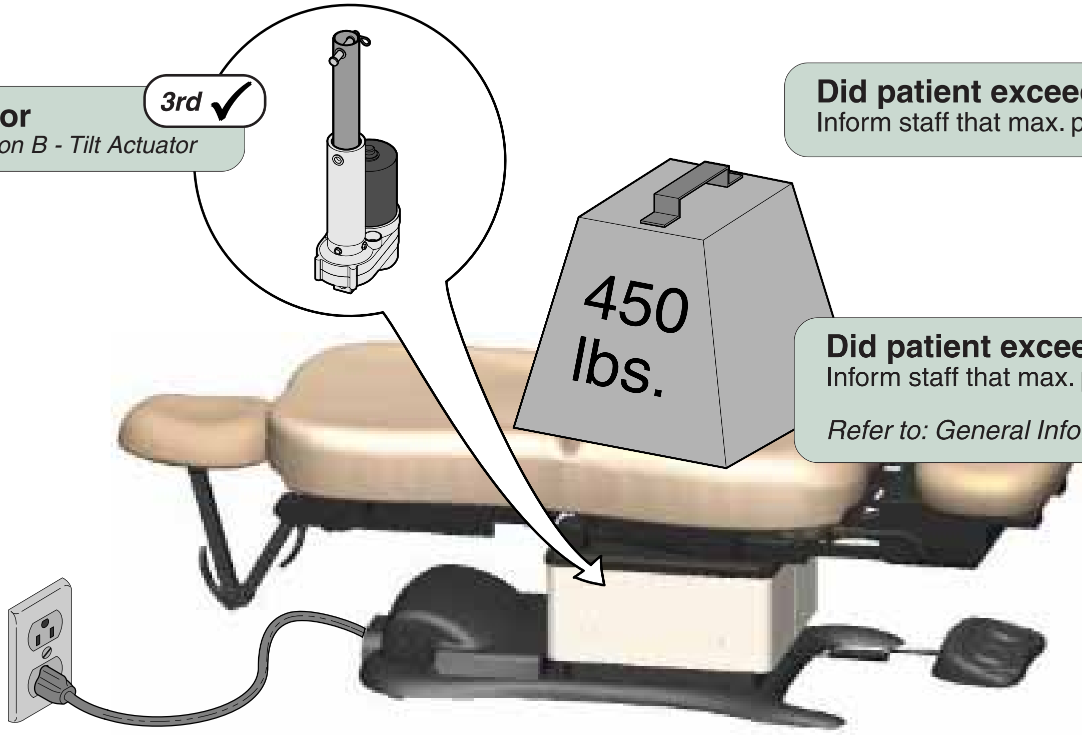
MA647601i

Tilt Up / Down Function - continued

Problem: *Moves slowly - **and/or***
Will not lift patient.

Refer To: **Go To Page:**

General Information *(Specifications)*..... ii
Tilt Actuator B-21
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



3rd ✓ **Tilt Actuator**
Refer to: Section B - Tilt Actuator

1st ✓ **Did patient exceed 450 lb. weight limit?**
Inform staff that max. patient weight is 450 lbs.

1st ✓ **Did patient exceed 450 lb. weight limit?**
Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section

2nd ✓ **Low voltage to table**
Required voltage:
115 VAC setting .... 115 ±10% VAC
230 VAC setting .... 230 ±10% VAC

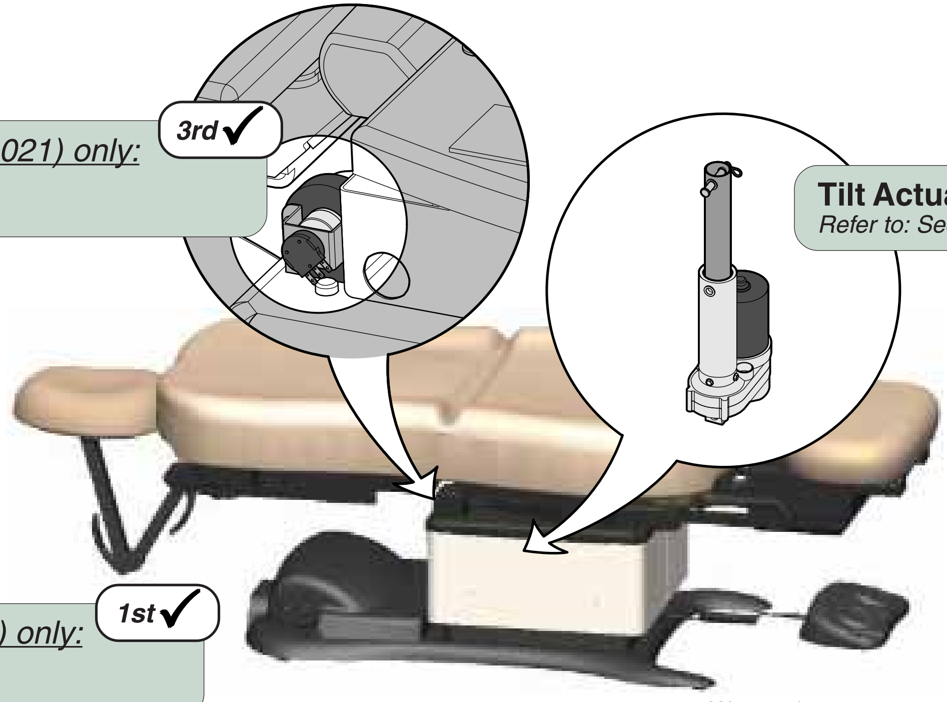
Models: ***Serial Numbers:*** ***ALL***

Refer To: **Go To Page:**

Tilt Actuator B-21
Position Sensors B-32
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Tilt Up / Down Function - *continued*

Problem: *Tilt Up* ***and/or*** *Tilt Down moves briefly, then stops ("beeps").*



3rd ✓
Models 630 (all) & 75 (-020 /-021) only:
Tilt Position Sensor
Refer to: Section B - Position Sensors

4th ✓
Tilt Actuator
Refer to: Section B - Tilt Actuator

1st ✓
Models 630 (all) & 75 (-020 /-021) only:
Calibrate PC Board
Refer to: Section B - Main PC Board

2nd ✓
Loose / Damaged Wire Connections
(Tilt Position Sensor, Hand/Foot Controls)

This page intentionally blank.

Back
Go To Table Of Contents
Next

Foot UP / DOWN Function

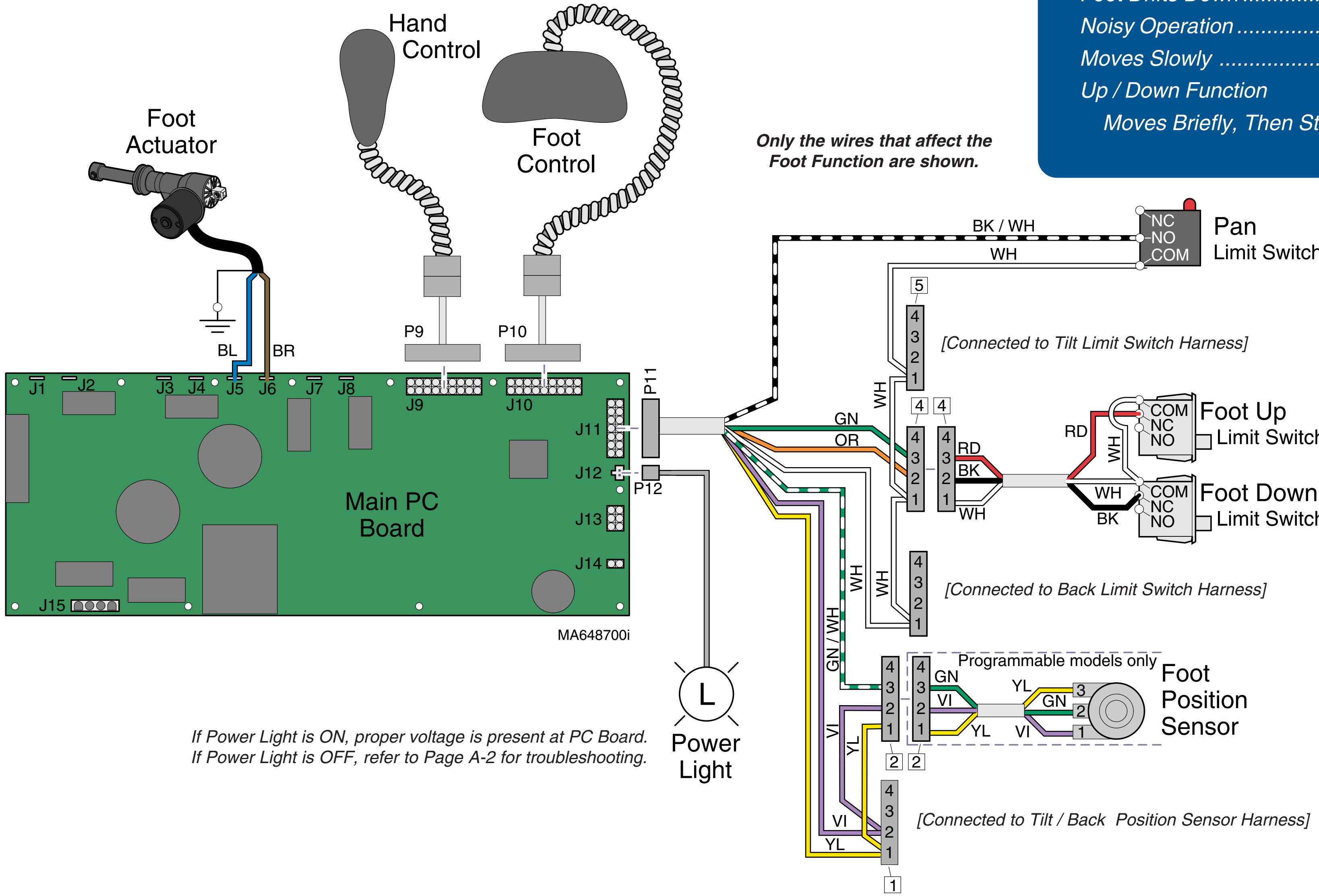
This illustration shows only the components that affect the Foot UP / DOWN function.
Refer to the following page for a detailed description of Foot UP / DOWN operation.

Troubleshooting
[Foot Up / Down Function]

Go To Page:

Problem

No Foot UP or DOWN A-40
No Foot UP (DOWN - OK).................. A-41
No Foot DOWN (UP - OK).................. A-42
Foot Drifts Down A-43
Noisy Operation A-44
Moves Slowly A-45
Up / Down Function
Moves Briefly, Then Stops A-46


Hand
Control
Foot
Control
Foot
Actuator
BL
BR
P9
P10
P11
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
P12
J13
J14
J15
Main PC
Board
MA648700i
BK / WH
WH
NC
NO
COM
Pan
Limit Switch
5
4
3
2
1
[Connected to Tilt Limit Switch Harness]
WH
GN
OR
4
4
RD
BK
WH
RD
WH
COM
NC
NO
Foot Up
Limit Switch
WH
BK
COM
NC
NO
Foot Down
Limit Switch
[Connected to Back Limit Switch Harness]
GN / WH
VI
YL
Programmable models only
GN
VI
YL
GN
YL
VI
3
2
1
Foot
Position
Sensor
2
2
VI
YL
[Connected to Tilt / Back Position Sensor Harness]
1
L
Power
Light

Only the wires that affect the Foot Function are shown.

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

Foot UP / DOWN Function

Is There Power To The Table?
When voltage is present at the PC board, the power light is illuminated.
[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls
Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Foot Up Operation

When the Foot Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the foot actuator motor.

The actuator motor runs and raises the foot section.

NOTE
The PC board continuously monitors the Foot Up Limit Switch, the Pan Limit Switch, and the Foot position sensor*.

If the Foot Up Limit Switch is tripped (open), the Foot Up function will not operate.

When the treatment pan (located under the seat section) is pulled out, the Pan Limit Switch opens. If the Pan Limit Switch is open, the Foot Up function will not operate.

If the Foot position sensor detects that the foot section has reached its upper limit, the Foot Up function will not operate.*

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Foot Up limit switch is tripped.
3. Pan Limit Switch opens.
   (Treatment pan is pulled out)
3. Emergency Stop button** is pressed.
4. Position Sensor malfunction*****.
5. Overcurrent protection tripped.
6. Software time-out limit is reached.
   (approx. 20 seconds).

Foot Down Operation

When the Foot Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the foot actuator motor.

The actuator motor runs and lowers the foot section.

NOTE
The PC board continuously monitors the Foot Down limit switch and the Foot position sensor*.

If the Foot Down limit switch is tripped (open), the Foot Down function will not operate.

If the Foot position sensor detects that the foot section has reached its lower limit, the Foot Down function will not operate.

Actuator Motor runs until:
1. Hand / foot control button is released.
2. Foot Down limit switch is tripped.
3. Emergency Stop button** is pressed.
5. Position Sensor malfunction*****.
6. Overcurrent protection tripped.
7. Software time-out limit is reached
   (approx. 20 seconds).

* Programmable models only.

** Midmark models only.
[This feature is not available on Ritter models]

Back

Go To Table Of Contents

Next

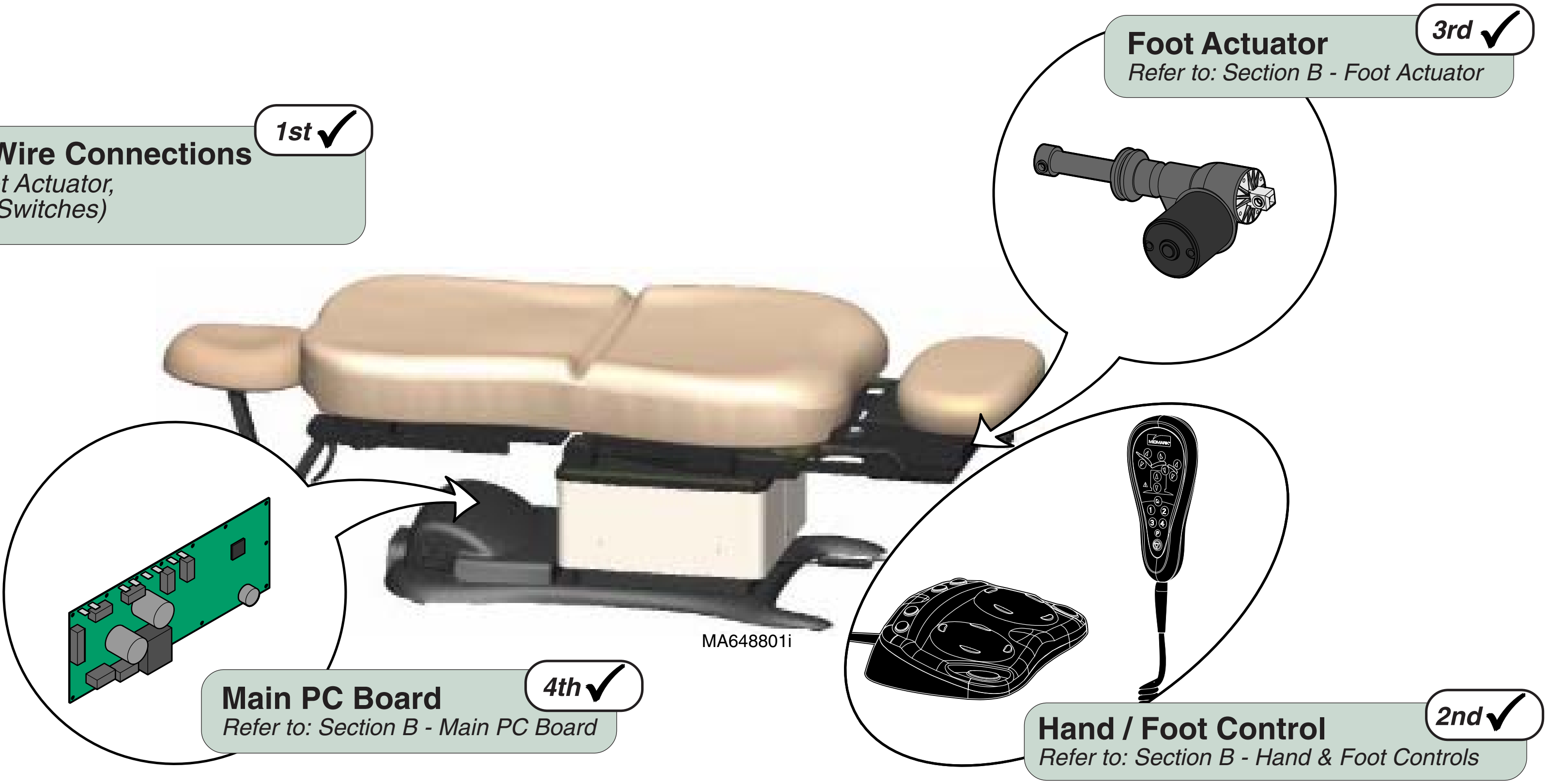
Foot Up / Down Function *- continued*

Problem: *No Foot Up or Foot Down.*

Refer To: **Go To Page:**

Limit Switches B-4
Hand & Foot Controls B-6
Foot Actuator B-25
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Loose / Damaged Wire Connections *1st* ✓
(Hand/Foot Control, Foot Actuator,
& Foot Up/Down Limit Switches)



Hand / Foot Control *2nd* ✓
Refer to: Section B - Hand & Foot Controls

Foot Actuator *3rd* ✓
Refer to: Section B - Foot Actuator

Main PC Board *4th* ✓
Refer to: Section B - Main PC Board

Models: *ALL*
Serial Numbers:

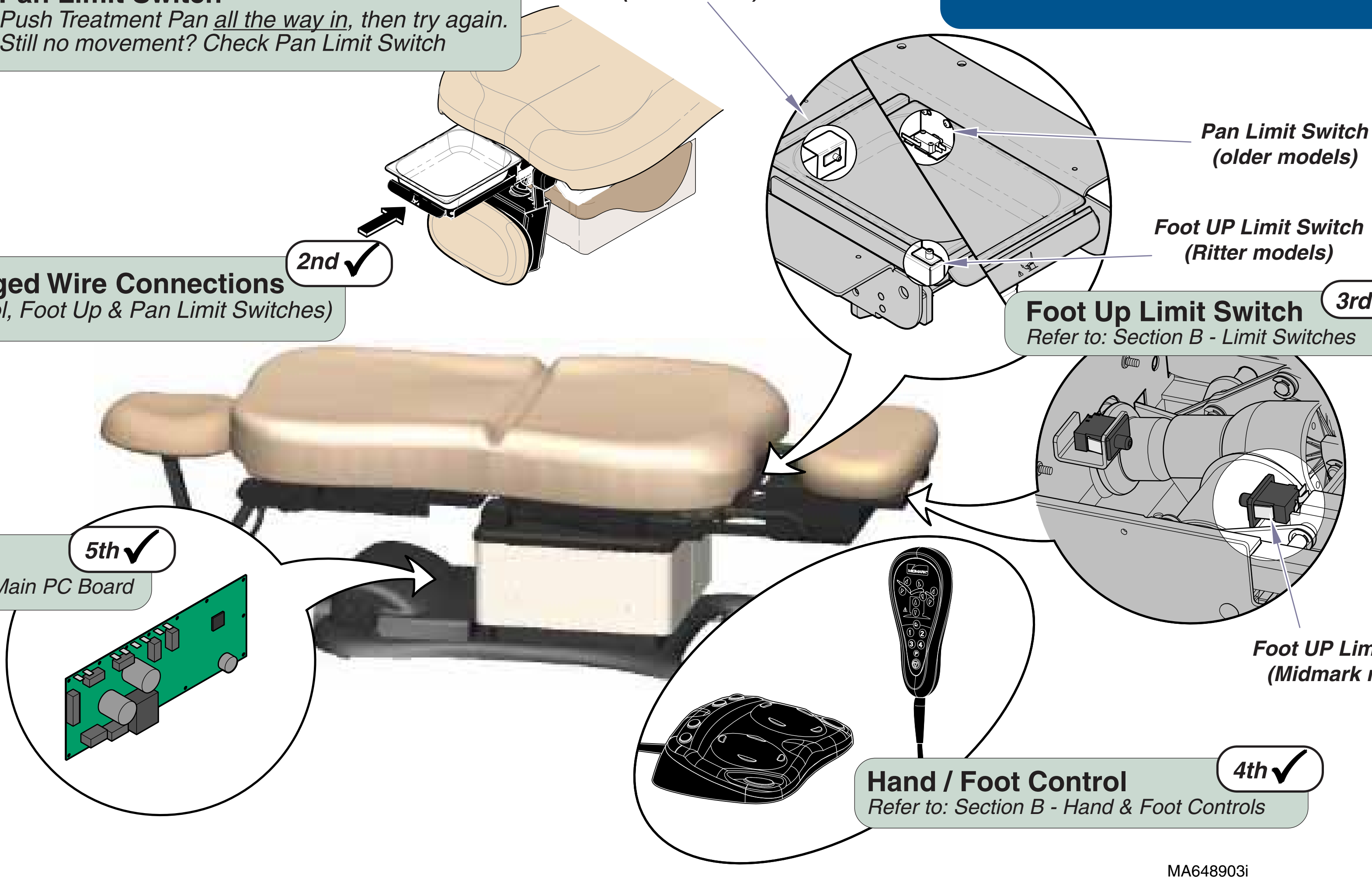
Rev. 4/24/13

Foot Up / Down Function - *continued*

Problem: *No Foot Up.*
Foot Down - OK.

Refer To: **Go To Page:**

Limit Switches B-3
Hand & Foot Controls B-6
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1


Pan Limit Switch
(later models)
Pan Limit Switch
(older models)
Foot UP Limit Switch
(Ritter models)
Foot UP Limit Switch
(Midmark models)
MA648903i

Pan Limit Switch *1st* ✓
Push Treatment Pan all the way in, then try again.
Still no movement? Check Pan Limit Switch

Loose / Damaged Wire Connections *2nd* ✓
(Hand/Foot Control, Foot Up & Pan Limit Switches)

Foot Up Limit Switch *3rd* ✓
Refer to: Section B - Limit Switches

Hand / Foot Control *4th* ✓
Refer to: Section B - Hand & Foot Controls

Main PC Board *5th* ✓
Refer to: Section B - Main PC Board

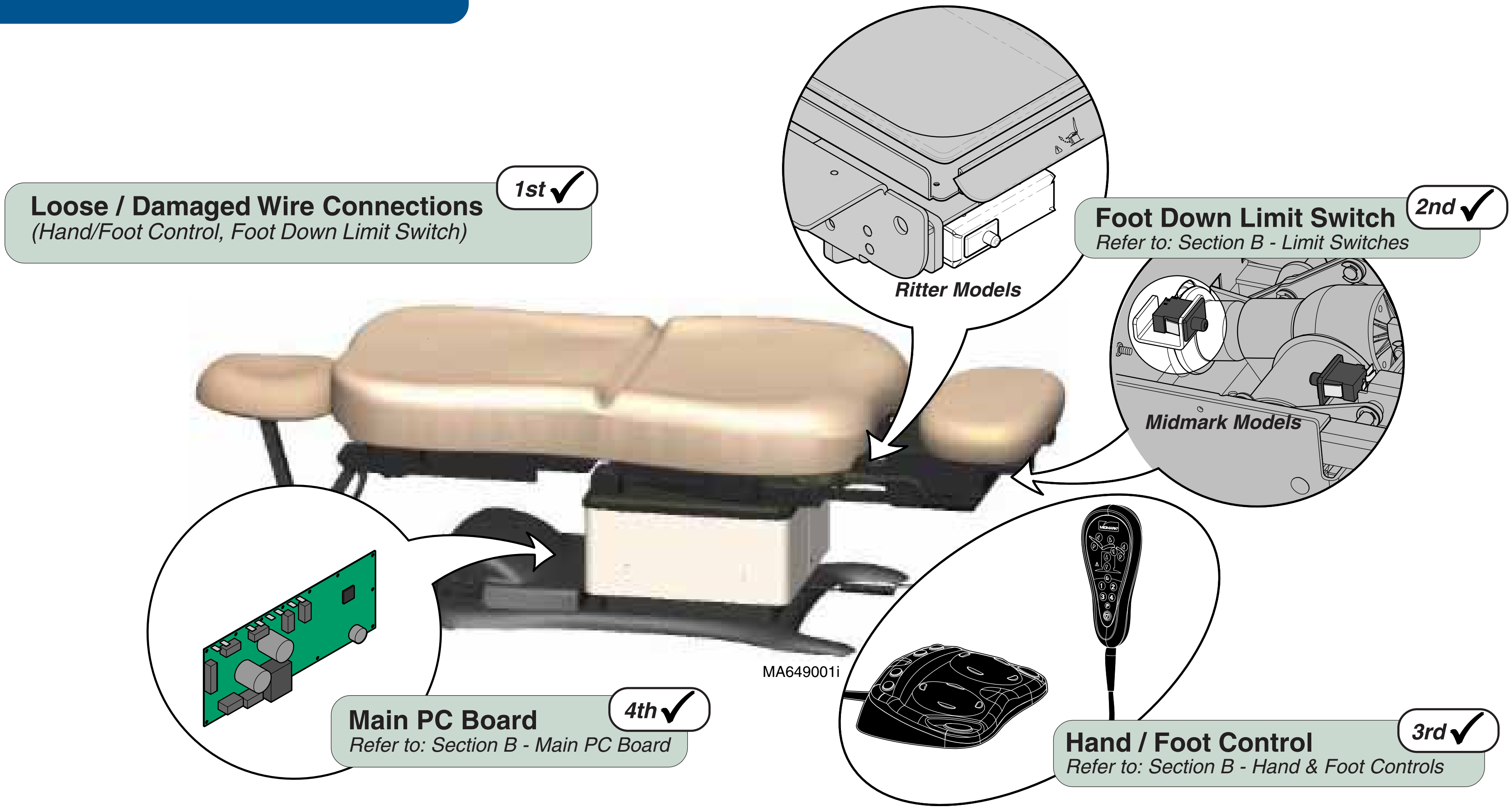
Models: ***ALL***
Serial Numbers:

Foot Up / Down Function - continued

Problem: No Foot Down.
Foot Up - OK.

Refer To: Go To Page:

Limit Switches B-3
Hand & Foot Controls B-6
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Loose / Damaged Wire Connections 1st ✓
(Hand/Foot Control, Foot Down Limit Switch)

Foot Down Limit Switch 2nd ✓
Refer to: Section B - Limit Switches

Hand / Foot Control 3rd ✓
Refer to: Section B - Hand & Foot Controls

Main PC Board 4th ✓
Refer to: Section B - Main PC Board

Foot Up / Down Function *- continued*

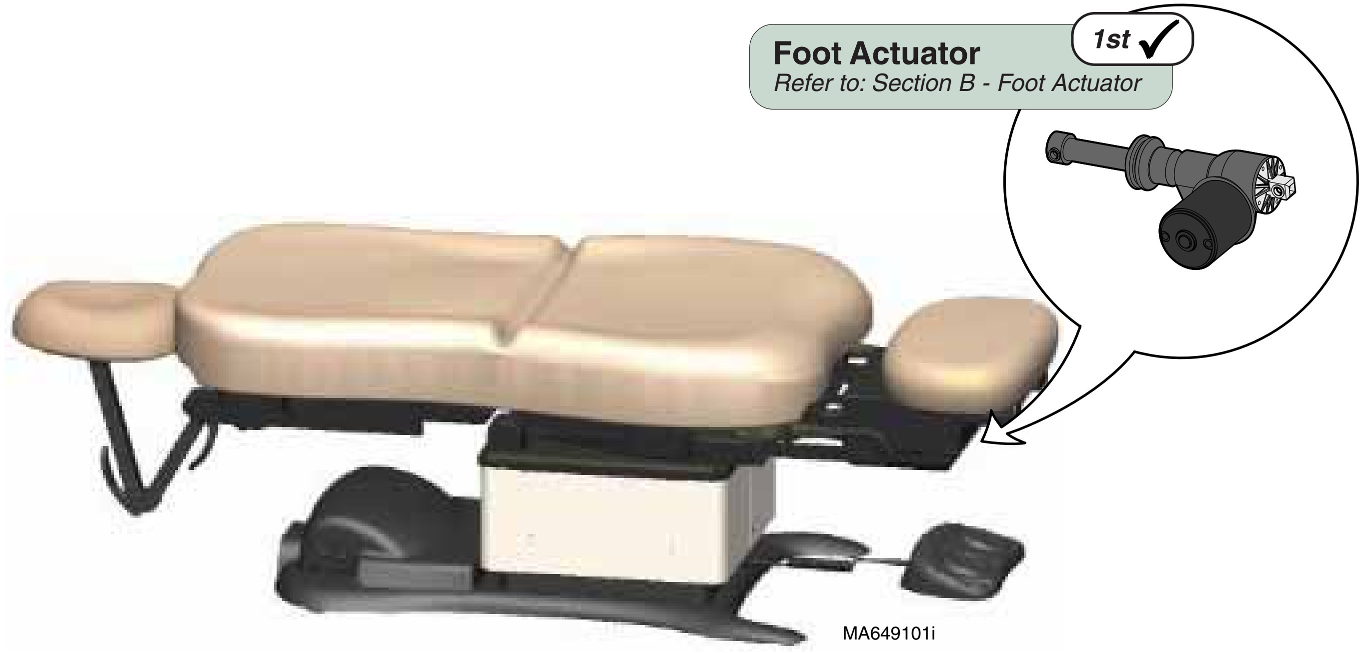
Problem: *Foot drifts down.*

Refer To: | **Go To Page:**

Foot Actuator B-25
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Foot Actuator *1st* ✓

Refer to: Section B - Foot Actuator



Models: ***Serial Numbers:*** ***ALL***

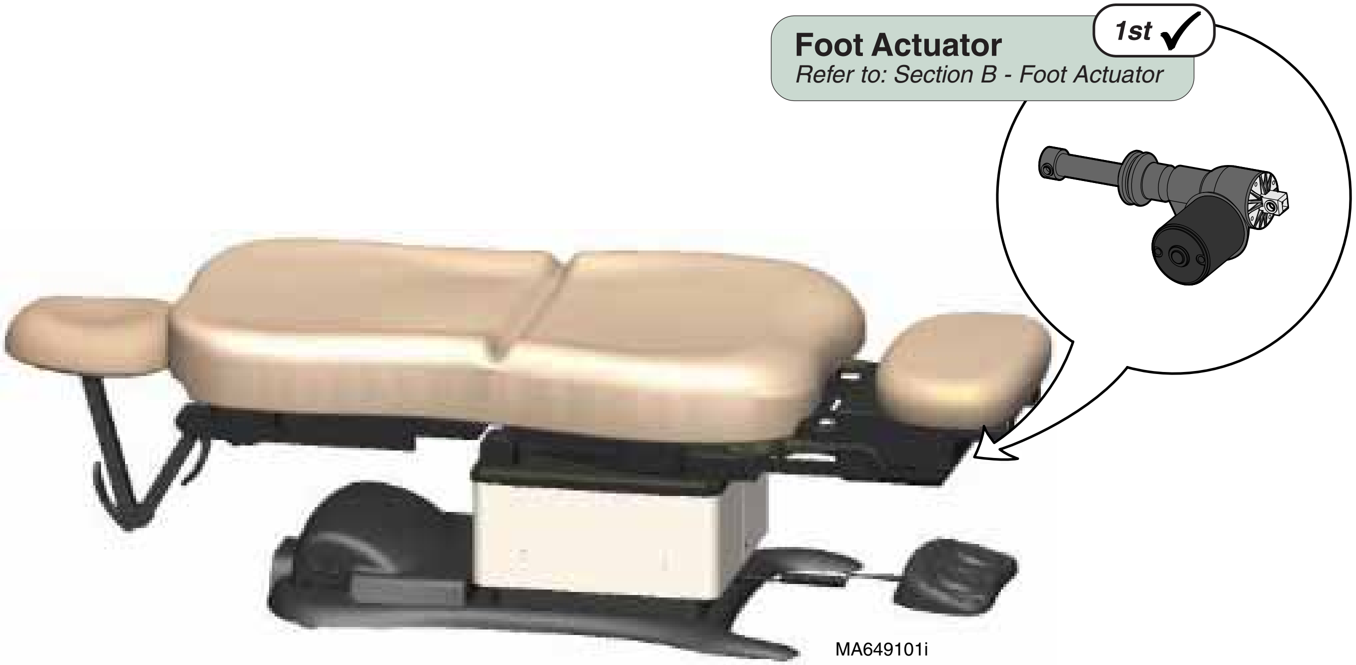
Refer To: **Go To Page:**
Foot Actuator B-25
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Foot Up / Down Function - *continued*

Problem: *Noisy operation.*
(Grinding, squeaking, etc)

Foot Actuator
Refer to: Section B - Foot Actuator

1st ✓



Foot Up / Down Function - continued

Problem: *Moves slowly - **and/or***
Will not lift patient.

Refer To:

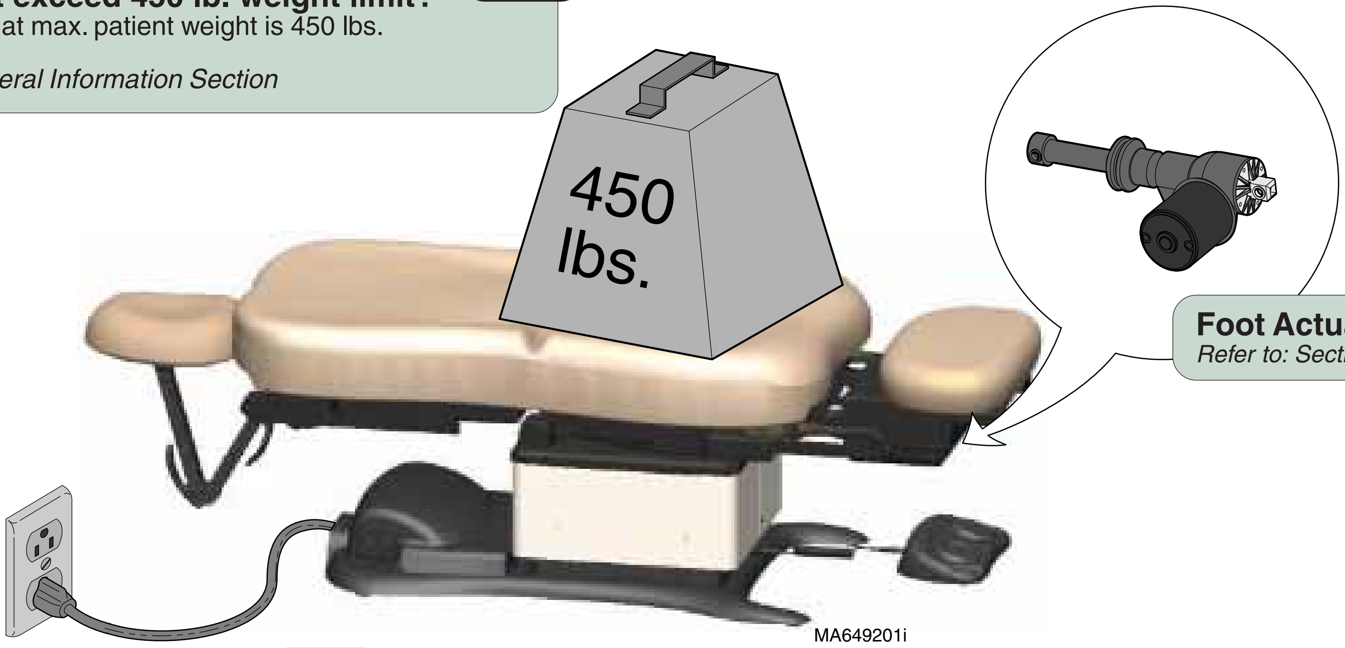
Go To Page:

General Information *(Specifications)*..... ii
Foot Actuator B-25
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

1st ✓

Did patient exceed 450 lb. weight limit?
Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section



3rd ✓

Foot Actuator
Refer to: Section B - Foot Actuator

2nd ✓

Low voltage to table
Required voltage:
115 VAC setting .... 115 ±10% VAC
230 VAC setting .... 230 ±10% VAC

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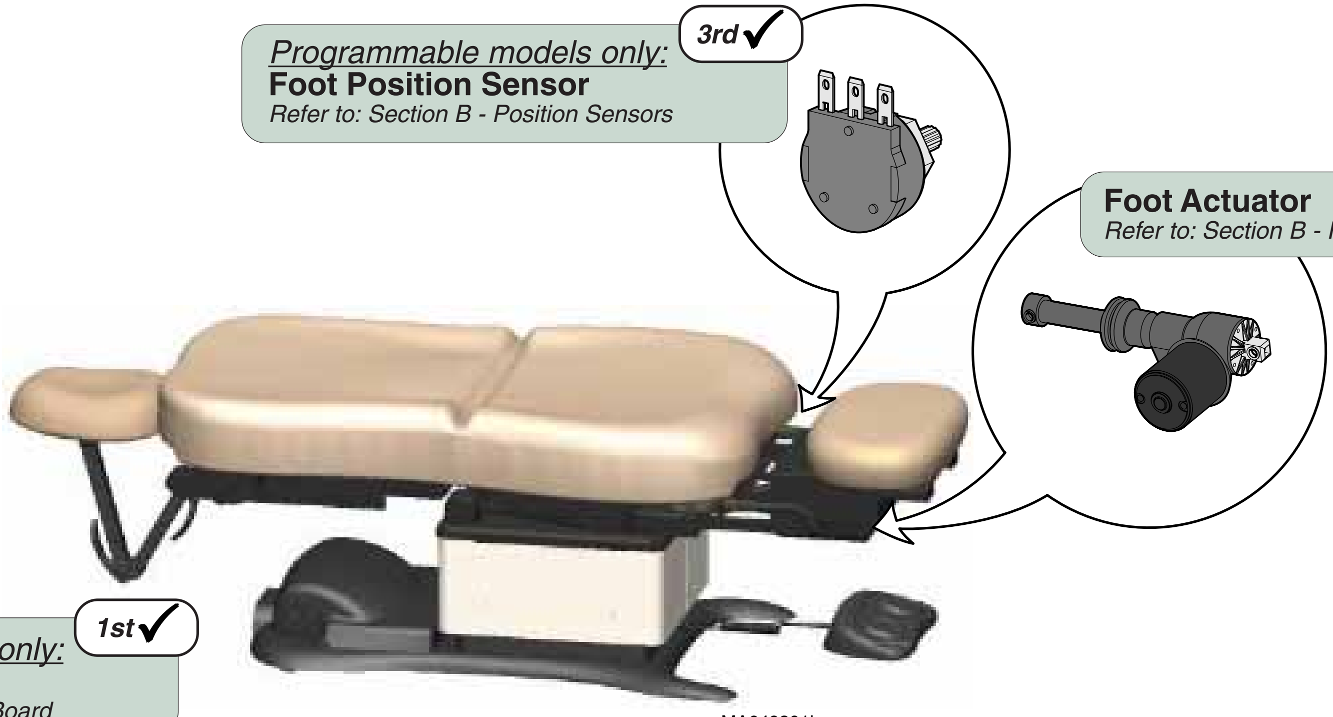
Next

Refer To: **Go To Page:**

Foot Actuator B-25
Position Sensors B-32
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Foot Up / Down Function - continued

Problem: *Foot Up **and/or** Foot Down moves briefly, then stops ("beeps").*



1st ✓

Programmable models only:
Calibrate PC Board
Refer to: Section B - Main PC Board

2nd ✓

Loose / Damaged Wire Connections
(Foot Position Sensor, Hand/Foot Controls, Foot limit switches, Foot actuator)

3rd ✓

Programmable models only:
Foot Position Sensor
Refer to: Section B - Position Sensors

4th ✓

Foot Actuator
Refer to: Section B - Foot Actuator

Models: ***ALL***
Serial Numbers:

This page intentionally blank.

Crash Avoidance System

The Crash Avoidance System disables the *Base Down*, *Back Down*, and *Tilt Up* functions if a potential crash position is detected.

This illustration shows only the components that are monitored by the Crash Avoidance System.
Refer to the following page for a detailed description of "crash" position and how the system functions.

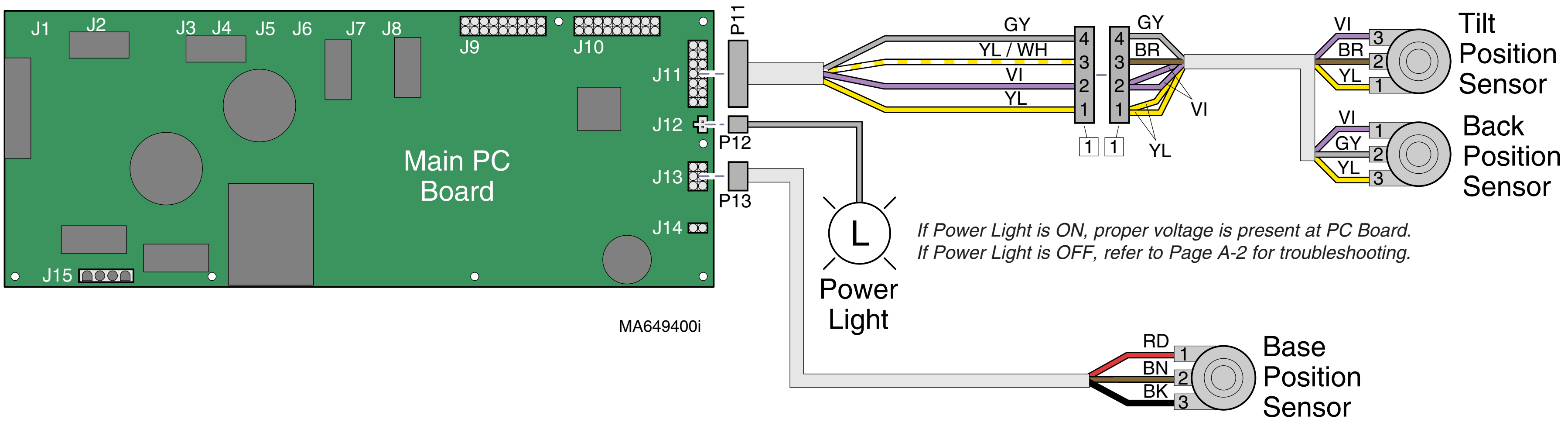
Troubleshooting
[Crash Avoidance System]

Problem

Go To Page:

No Base Down, Back Down, Tilt Up
[Table is NOT in "Crash Position"] A-50
Headrest Collides w/Floor A-51

Only the wires that affect the Crash Avoidance System are shown.


J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
Main PC Board
P11
P12
P13
GY
YL / WH
VI
YL
4
3
2
1
GY
BR
VI
YL
1
1
VI
BR
YL
3
2
1
Tilt Position Sensor
VI
GY
YL
1
2
3
Back Position Sensor
L
Power Light
RD
BN
BK
1
2
3
Base Position Sensor
MA649400i

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

Models:	***630*** ***(all)***	***75*** ***(-020/-021)***
Serial Numbers:	all	all

Crash Avoidance System

When Are Functions Disabled?

The Base, Back, and Tilt position sensors continuously monitor the position of each axis *(Base, Back, Tilt)*. This information is transmitted to the PC Board.

Based on the position sensors readings, circuitry on the PC Board estimates the position of the headrest mechanism. If a potential crash position is detected, the *Base Down*, *Back Down*, and *Tilt Up* functions are disabled.

When Are Functions Restored?

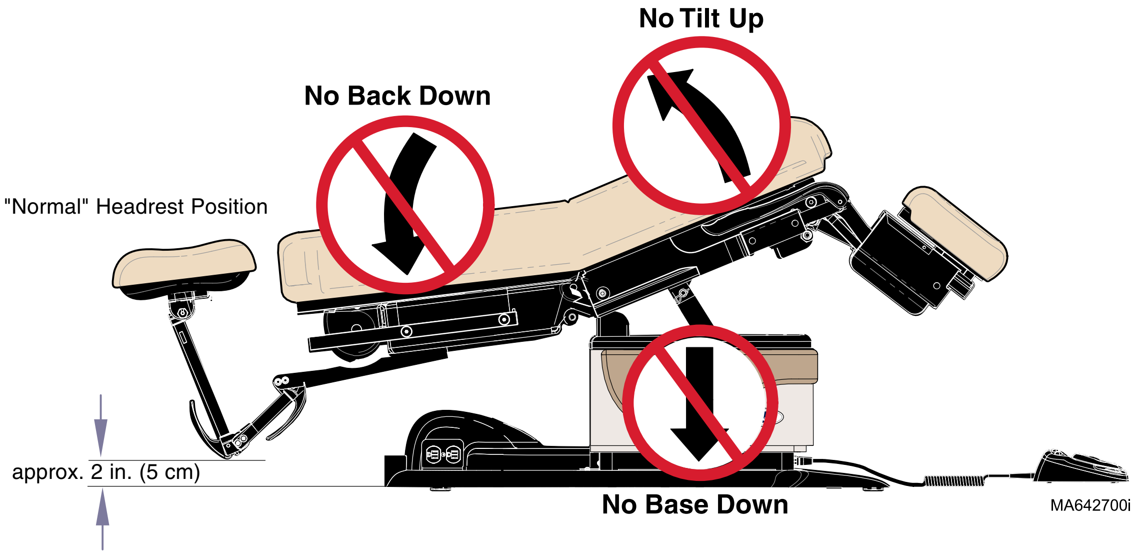
Functionality is restored when one or more of the axis *(Base, Back, and/or Tilt)* are moved out of the potential crash position.

What Is *Crash Position*?

The chair is considered to be in a potential crash position when the Base, Back, and Tilt position sensors indicate that the headrest mechanism is approximately 2 in. (5 cm) from the floor*.

* *This measurement is an estimate based on "normal" headrest position (shown). The distance from the floor will vary with different headrest positions.*

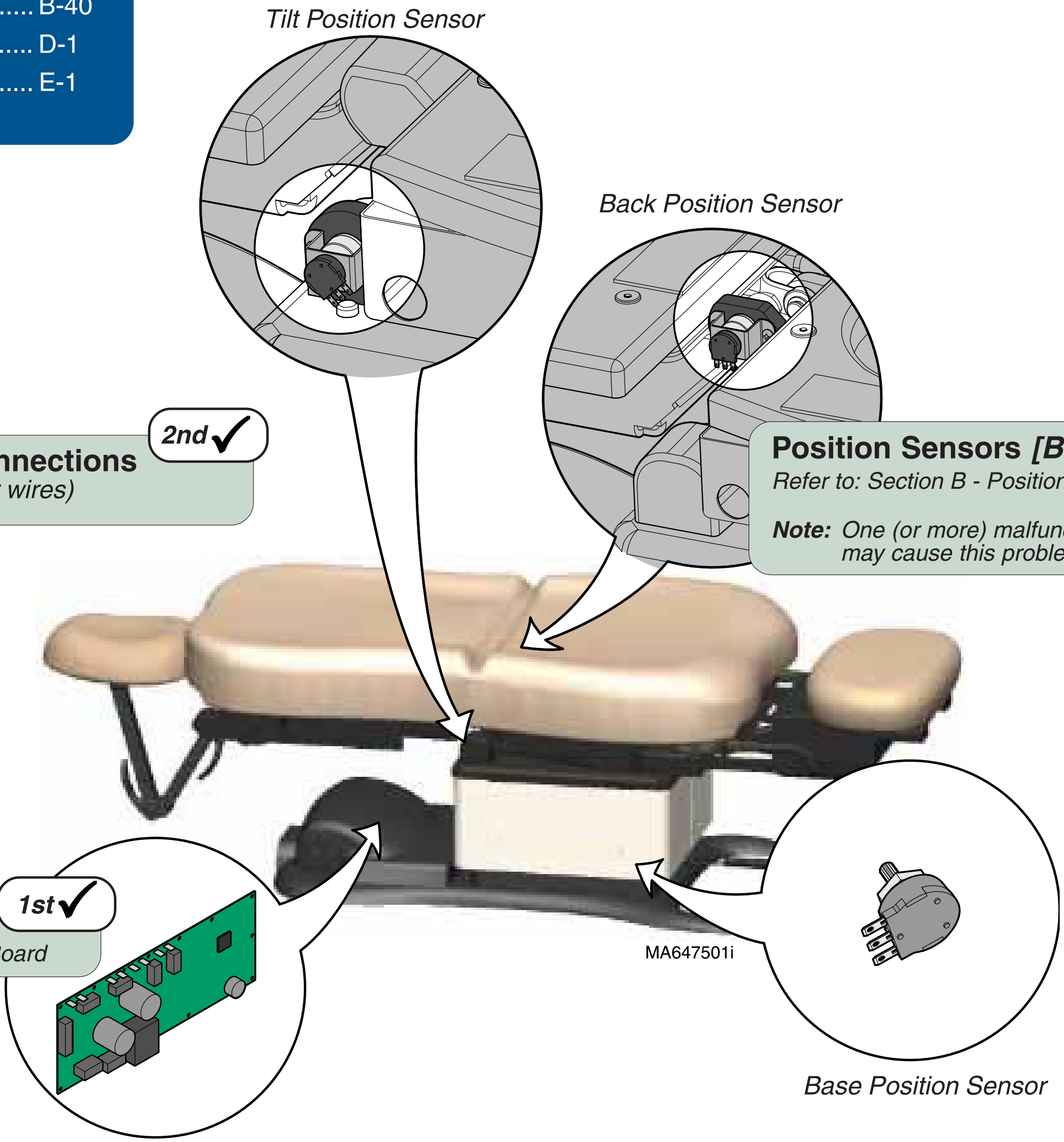
Example: *Chair in Crash Position*



Crash Avoidance System - continued

Problem: *No Base Down, Back Down, Tilt Up functions.*
- and - *Table is not is "Crash Position"*

Refer To:	**Go To Page:**
Position Sensors	B-32
Main PC Board	B-40
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1


Tilt Position Sensor
Back Position Sensor
Base Position Sensor
MA647501i

1st✓

Calibrate PC Board
Refer to: Section B - Main PC Board

2nd✓

Loose / Damaged Wire Connections
(Base / Tilt / Back Position Sensor wires)

3rd✓

Position Sensors *[Base / Back / Tilt]*
Refer to: Section B - Position Sensors

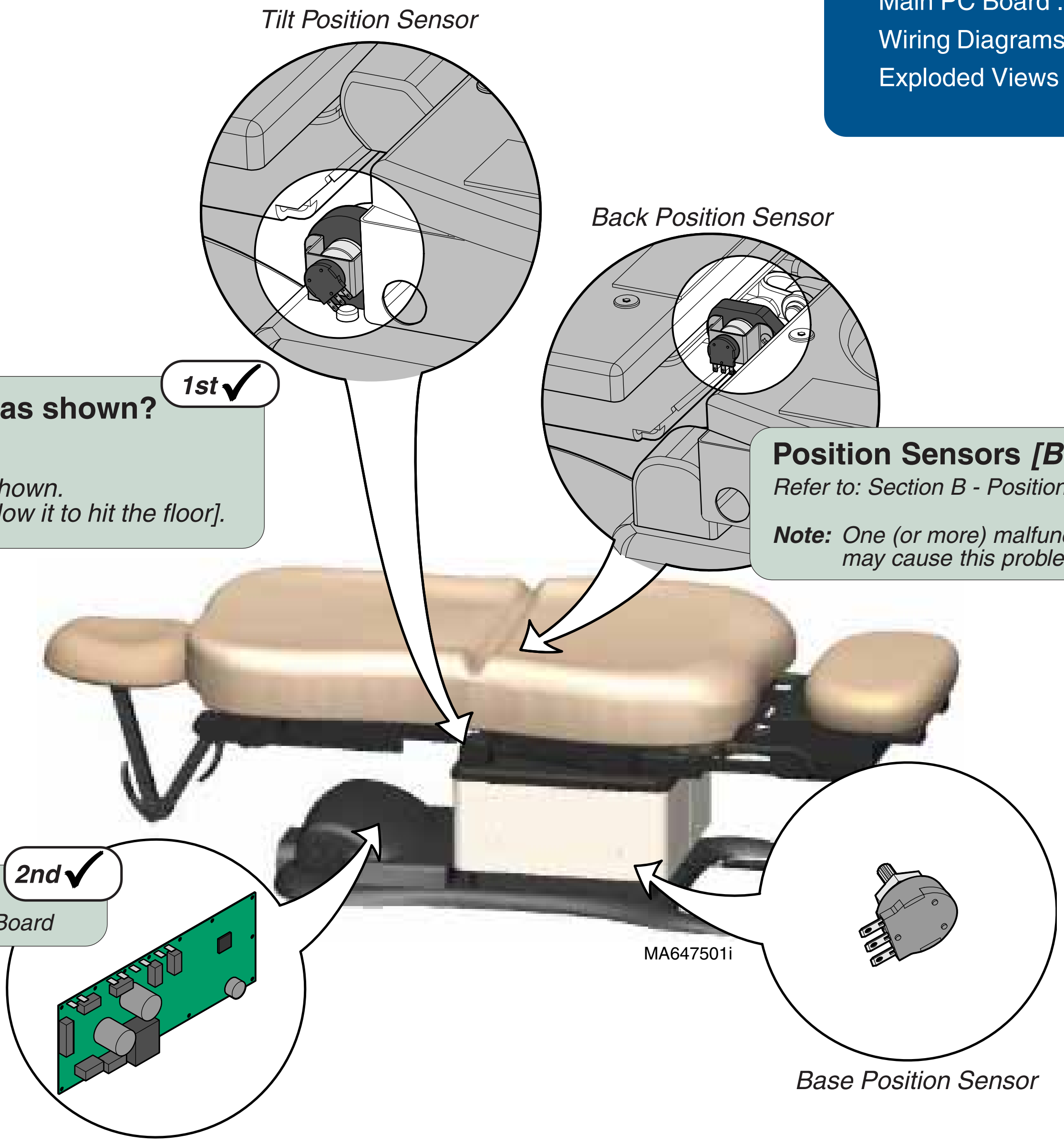
Note: *One (or more) malfunctioning sensor may cause this problem to occur.*

Models:	***630** (all)*	***75** (-020/-021)*
Serial Numbers:	all	all

Crash Avoidance System - *continued*

Problem: *Headrest collides with floor.*

Refer To:	**Go To Page:**
Position Sensors	B-32
Main PC Board	B-40
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1


Tilt Position Sensor
Back Position Sensor
MA647501i
Base Position Sensor

Is the headrest positioned as shown? *1st* ✓

If YES, go to next check.

If NO, reposition the headrest as shown.
[Certain headrest positions may allow it to hit the floor].

Calibrate PC Board *2nd* ✓

Refer to: Section B - Main PC Board

Position Sensors *[Base / Back / Tilt]* *3rd* ✓

Refer to: Section B - Position Sensors

Note: *One (or more) malfunctioning sensor may cause this problem to occur.*

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	all	all

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Position Programming

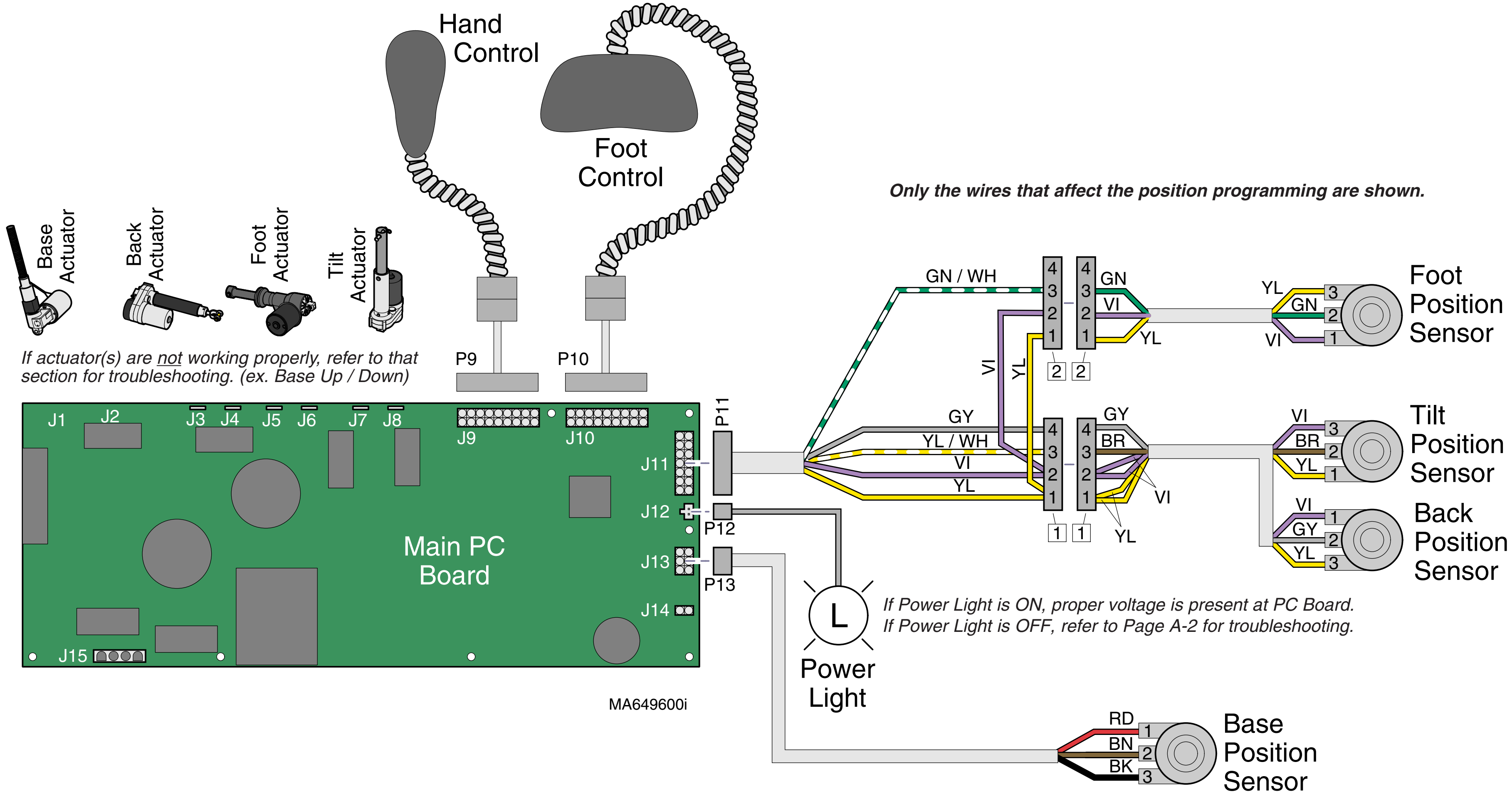
The programming feature allows the user to store up to four frequently used table positions.

This illustration shows only the components that affect the position programming.
Refer to the following page for a detailed description of this feature.

Troubleshooting
[Position Programming]

Problem — **Go To Page:**

Positions cannot be programmed A-54
When Position Button (1,2,3,4) is pressed:
- *Table does not move* A-54
- *Table moves to wrong position* A-54


Hand Control
Foot Control
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
Main PC Board
GN / WH
GY
YL / WH
VI
YL
GN
BR
4
3
2
1
Foot Position Sensor
Tilt Position Sensor
Back Position Sensor
Base Position Sensor
RD
BN
BK
L
Power Light

Only the wires that affect the position programming are shown.

If actuator(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

MA649600i

Position Programming

Programming a Table Position

The four position sensors continuously monitor the position of each axis *(Base, Back, Tilt, Foot)*. This information is transmitted to the PC Board.

When a table position is properly programmed into the PC board's memory, the position of each axis is recorded based on the readings from the four sensors.

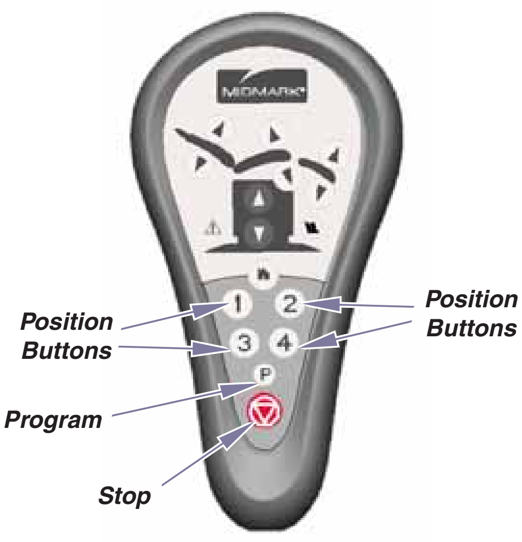
Recalling a Programmed Position

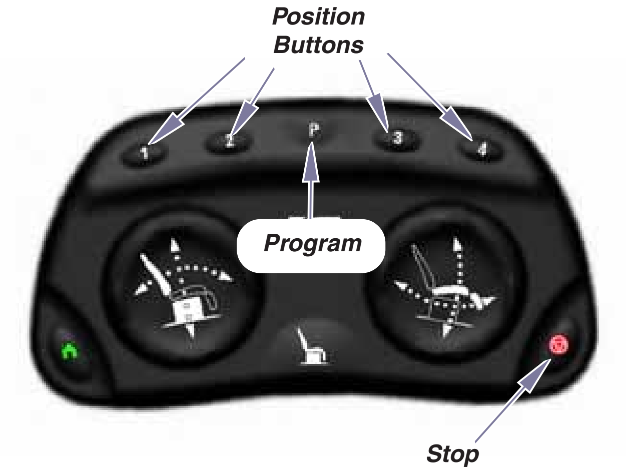
When a programmed position is recalled, the PC board activates the required functions *(all at the same time)* until the readings from the four position sensors match those of the recorded position.

To program a table position....

A. Move the table to desired position.
B. Press the Program button. (you will hear a single “beep”)
C. Press the desired Position button (1, 2, 3, or 4). (three “beeps”)

Tip: *You must press the Position button within 5 seconds of pressing the Program button.*





To recall a programmed position....
Press and hold the desired Position button (1, 2, 3, or 4).

Refer To: **Go To Page:**
Hand & Foot Controls B-6
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

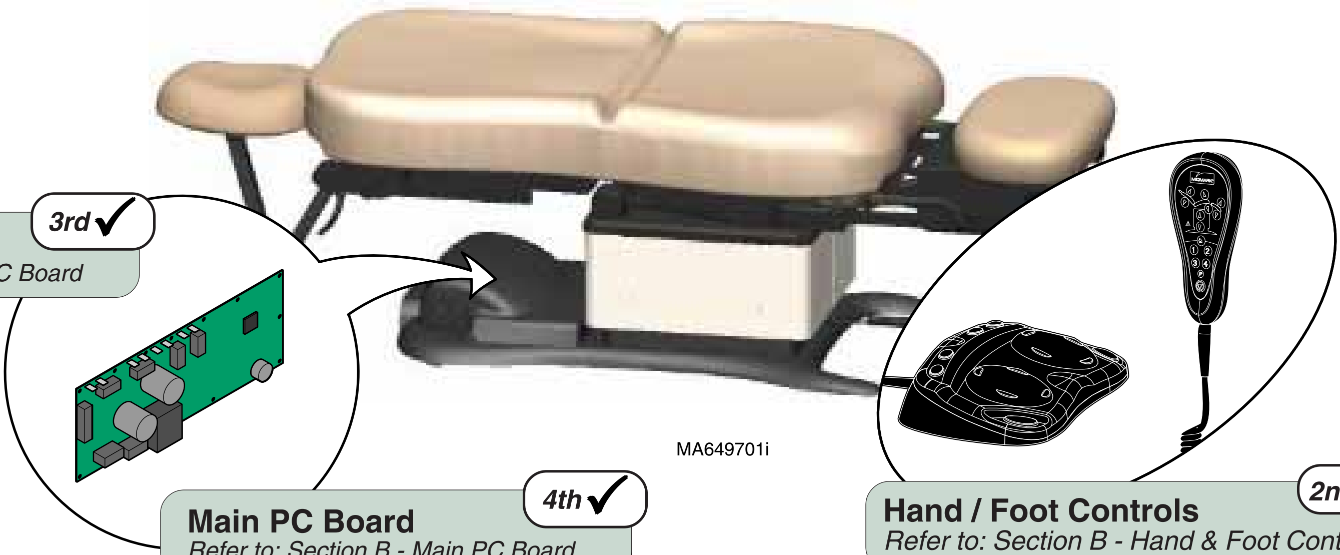
Position Programming - *continued*

Problem: *Positions cannot be programmed. - **or***
When position button is pressed, table does not move, or moves to wrong position.

[All manual functions - OK]

Note: *If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)*

Reprogram the desired position. ***(see previous page)*** *1st ✓*
Did you hear all of the "beeps" indicated in the programming procedure?
If NO, go to ***2nd ✓*** *If YES, go to* ***3rd ✓***



Calibrate PC Board *3rd ✓*
Refer to: Section B - Main PC Board

Main PC Board *4th ✓*
Refer to: Section B - Main PC Board

Hand / Foot Controls *2nd ✓*
Refer to: Section B - Hand & Foot Controls.

Models: ***Serial Numbers:***	***630*** ***(-002 & -004)*** all	***75*** ***(-021)*** all

This page intentionally blank.

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Go To Table Of Contents
Next

"Home" Function

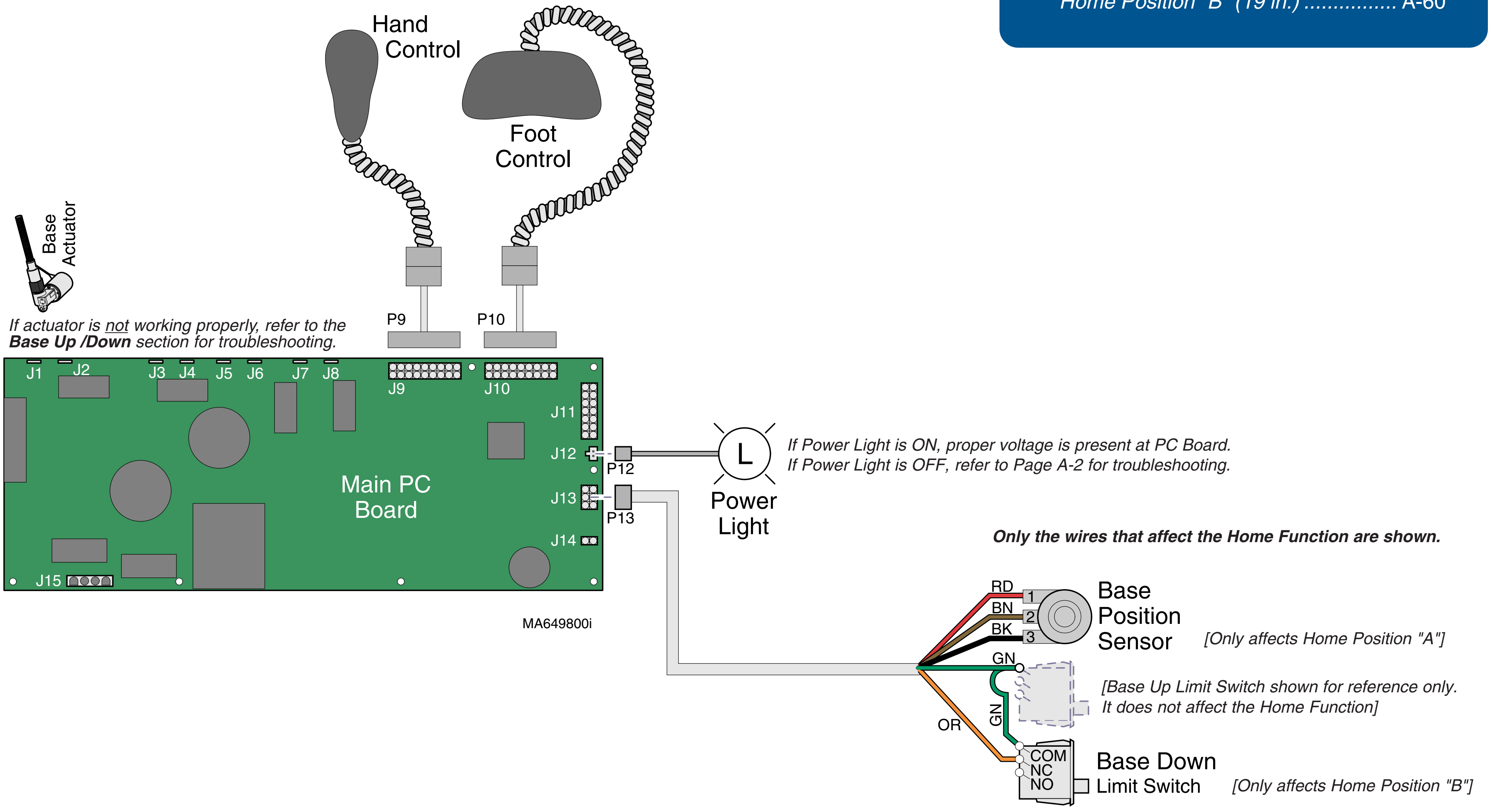
The Home function automatically lowers the table base to ***Home Position "A"*** *[23 in. (58.4 cm)]* or ***Home Position "B"*** *[19 in. (48.2 cm)]*.

This illustration shows only the components that affect the Home Function.
Refer to the following page for a detailed description of this feature.

Troubleshooting
["Home" Function]

Go To Page:

Problem
When Home button is pressed,
nothing happens A-58
Table does not stop at correct height:
Home Position "A" (23 in.) A-59
Home Position "B" (19 in.) A-60


Hand
Control
Foot
Control
Base
Actuator
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
Main PC
Board
P12
P13
L
Power
Light
RD
BN
BK
1
2
3
Base
Position
Sensor
GN
GN
OR
COM
NC
NO
Base Down
Limit Switch
MA649800i

If actuator is not working properly, refer to the ***Base Up /Down*** *section for troubleshooting.*

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

Only the wires that affect the Home Function are shown.

[Only affects Home Position "A"]

[Base Up Limit Switch shown for reference only. It does not affect the Home Function]

[Only affects Home Position "B"]

"Home" Function

Home Position "A" ***[23 in. (58.4 cm)]***
When the Home button is pressed then immediately released, the Base Down function is activated.

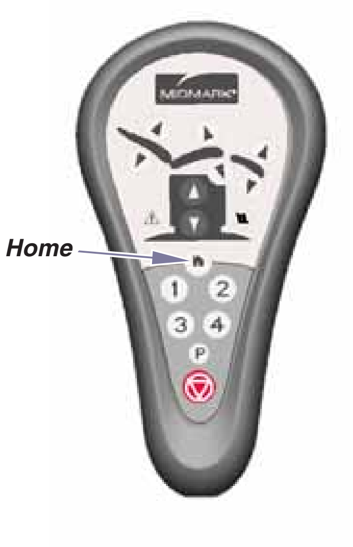
The Base Position Sensor monitors the height of the table as it lowers. This information is transmitted to the PC Board.

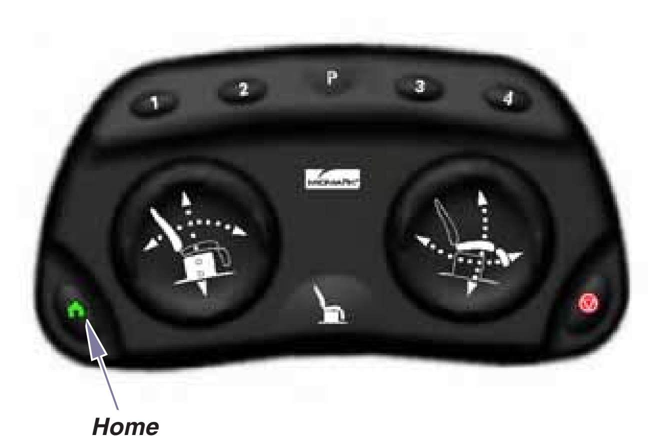
When the Base Position Sensor indicates that table has reached 23 in., the PC Board stops the table.

Home Position "B" ***[19 in. (48.2 cm)]***
When the Home button is pressed and held for approximately 2 seconds a short "*beep*" is emitted, and the Base Down function is activated.

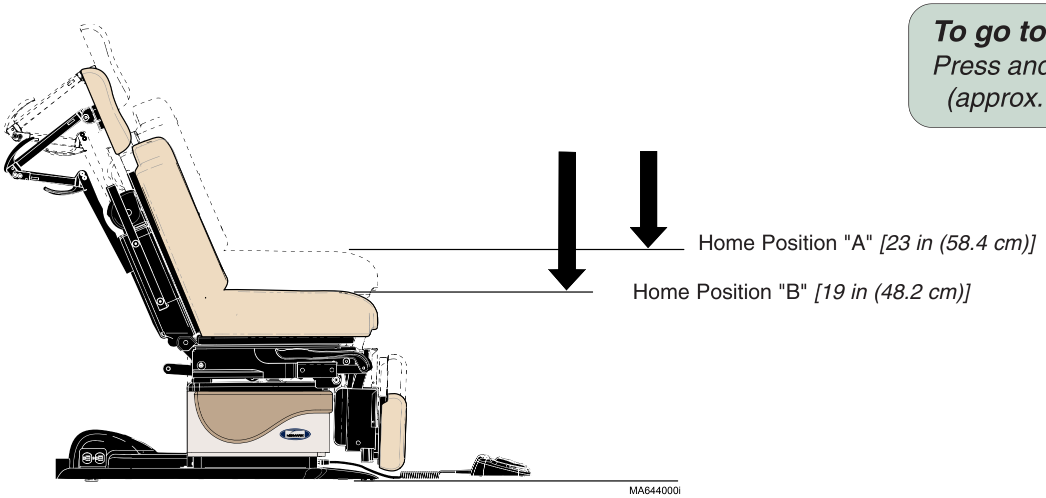
The table stops when the Base Down Limit Switch is tripped at approx. 19 in.

To go to Home Position "A" [23 in. (58.4 cm)]....
Press, then immediately release the Home button.





To go to Home Position "B" [19 in. (48.2 cm)]...
Press and hold the Home button until you hear a single "beep" (approx. 2 seconds).


Home Position "A" [23 in (58.4 cm)]
Home Position "B" [19 in (48.2 cm)]
MA644000i

Back

Go To Table Of Contents

Next

Refer To:

Go To Page:

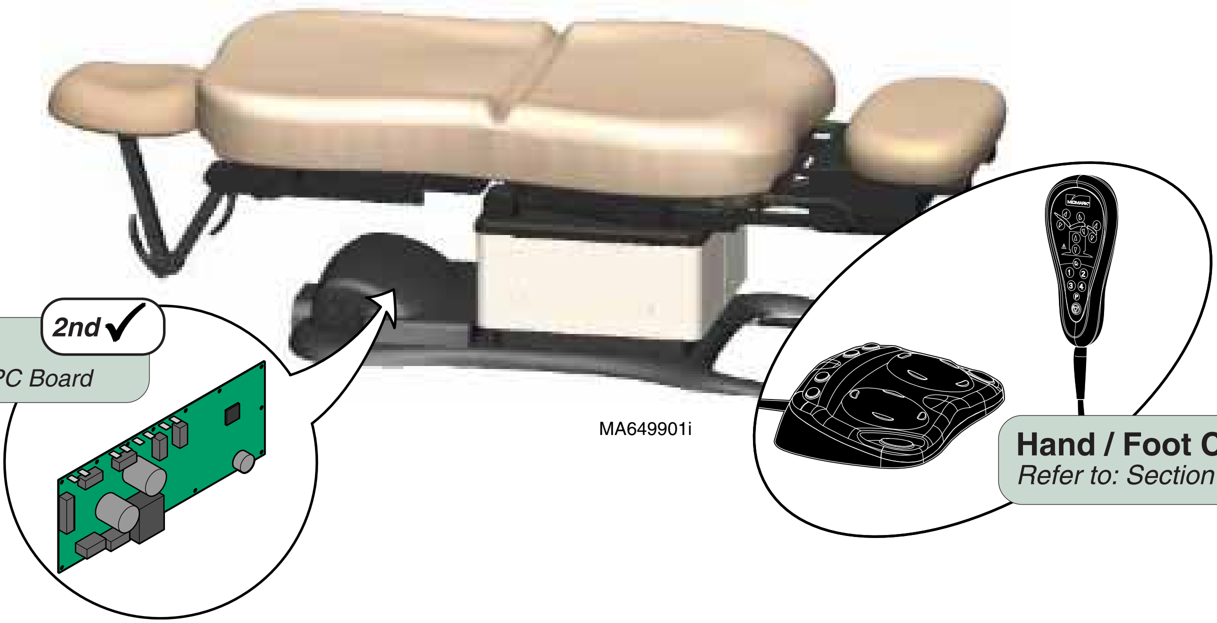
Hand & Foot Controls B-6
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

"Home" Function - *continued*

Problem: *When Home button is pressed, nothing happens.*

[All manual functions - OK]

Note: *If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)*



2nd ✓

Main PC Board
Refer to: Section B - Main PC Board

1st ✓

Hand / Foot Controls
Refer to: Section B - Hand & Foot Controls.

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Go To Table Of Contents
Next

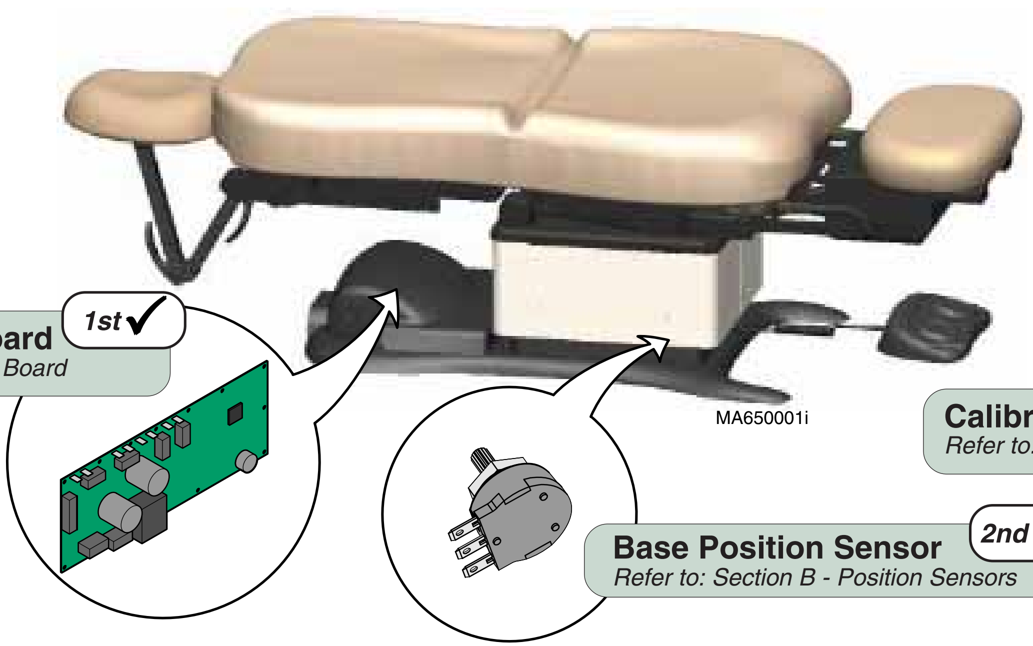
"Home" Function - *continued*

Problem: *Home position "A" does not stop at 23 in. (58 cm).*
Home position "B" - OK.

[All manual functions - OK]

Note: *If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)*

Refer To:	**Go To Page:**
Position Sensors	B-32
Main PC Board	B-40
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Calibrate Main PC Board *1st* ✓
Refer to: Section B - Main PC Board

Calibrate Main PC Board *1st* ✓
Refer to: Section B - Main PC Board

Base Position Sensor *2nd* ✓
Refer to: Section B - Position Sensors

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	all	all

Operation & Troubleshooting

Refer To: **Go To Page:**

Limit Switches B-3
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

"Home" Function - continued

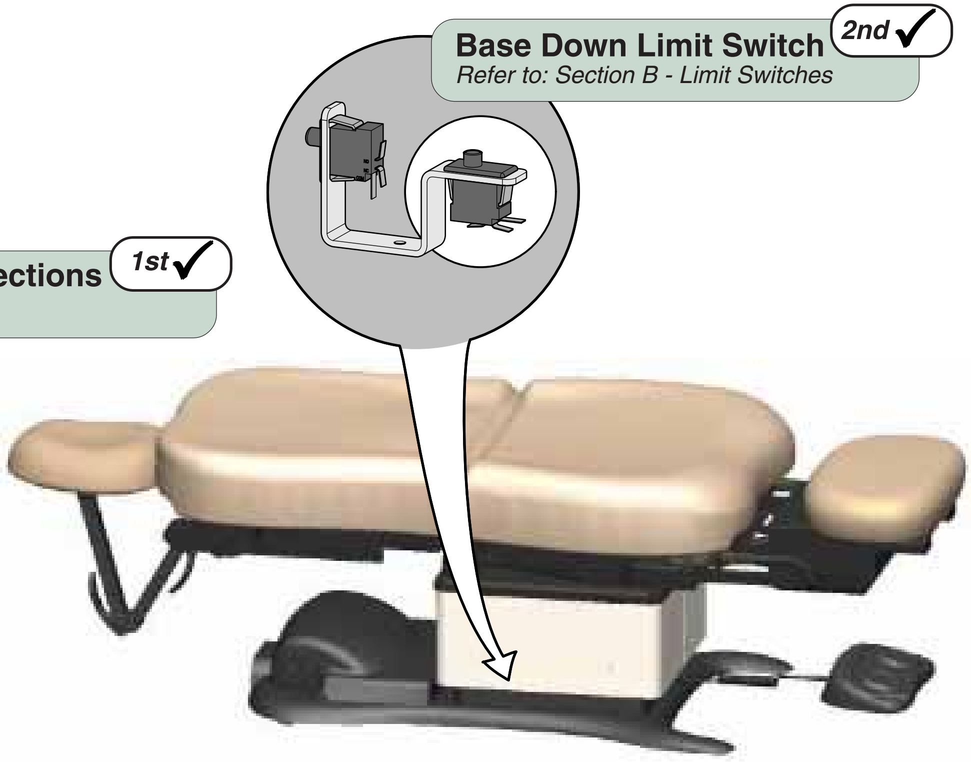
Problem: *Home position "B" does not stop at 19 in. (48 cm).*
Home position "A" - OK.

[All manual functions - OK]

Note: *If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)*

Loose / Damaged Wire Connections *1st ✓*
(Base Down Limit Switch)

Base Down Limit Switch *2nd ✓*
Refer to: Section B - Limit Switches



MA650101i

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Go To Table Of Contents
Next

Quick Chair™ Function (w/ Foot Control Only)

This function activates the *Base Down*, *Tilt Down*, *Foot Down*, and *Back Up* functions at the same time to move the table into "chair position".

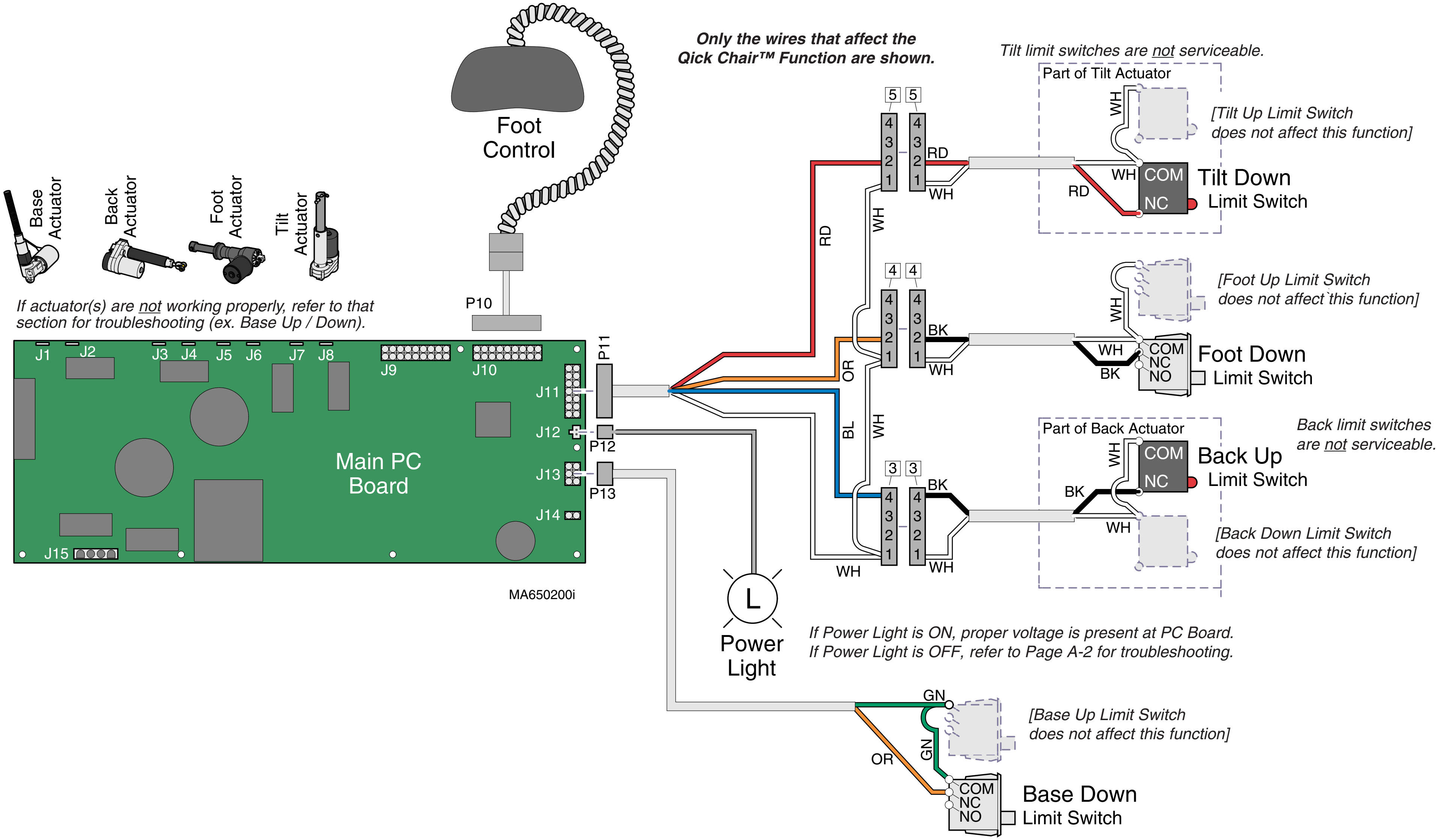
This illustration shows only the components that affect the Quick Chair™ Function.
Refer to the following page for a detailed description of this feature.

Troubleshooting
[Quick Chair™ Function]

Go To Page:

Problem

When Quick Chair button is pressed & held, the table does not move A-64


Foot Control
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
Main PC Board
MA650200i
RD
WH
OR
BL
BK
GN
5
4
3
2
1
Part of Tilt Actuator
COM
NC
NO
Tilt Down Limit Switch
Foot Down Limit Switch
Part of Back Actuator
Back Up Limit Switch
Base Down Limit Switch
L
Power Light

Only the wires that affect the Qick Chair™ Function are shown.

If actuator(s) are not working properly, refer to that section for troubleshooting (ex. Base Up / Down).

Tilt limit switches are not serviceable.

[Tilt Up Limit Switch does not affect this function]

[Foot Up Limit Switch does not affect this function]

Back limit switches are not serviceable.

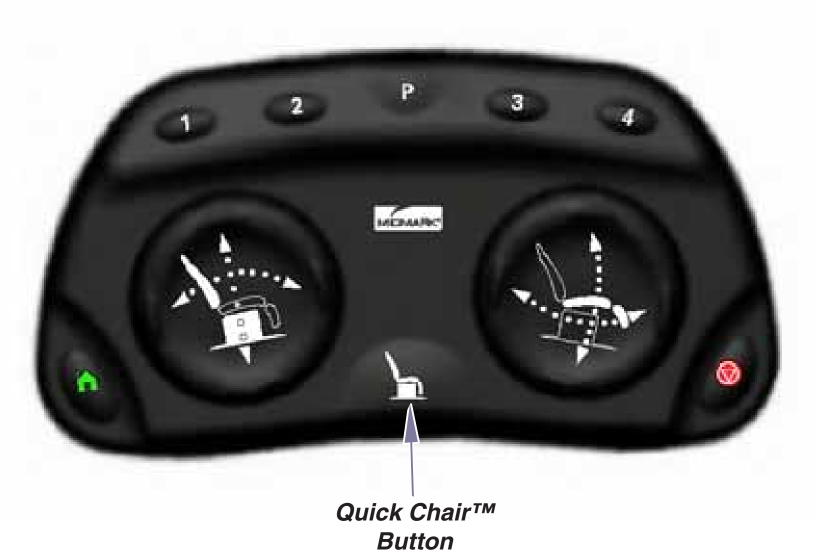
[Back Down Limit Switch does not affect this function]

If Power Light is ON, proper voltage is present at PC Board.
If Power Light is OFF, refer to Page A-2 for troubleshooting.

[Base Up Limit Switch does not affect this function]

Models:	***630** (all)*	***75** (-020/-021)*
Serial Numbers:	all	all *(w/optional foot control)*

Quick Chair™ Function



Quick Chair™ Button

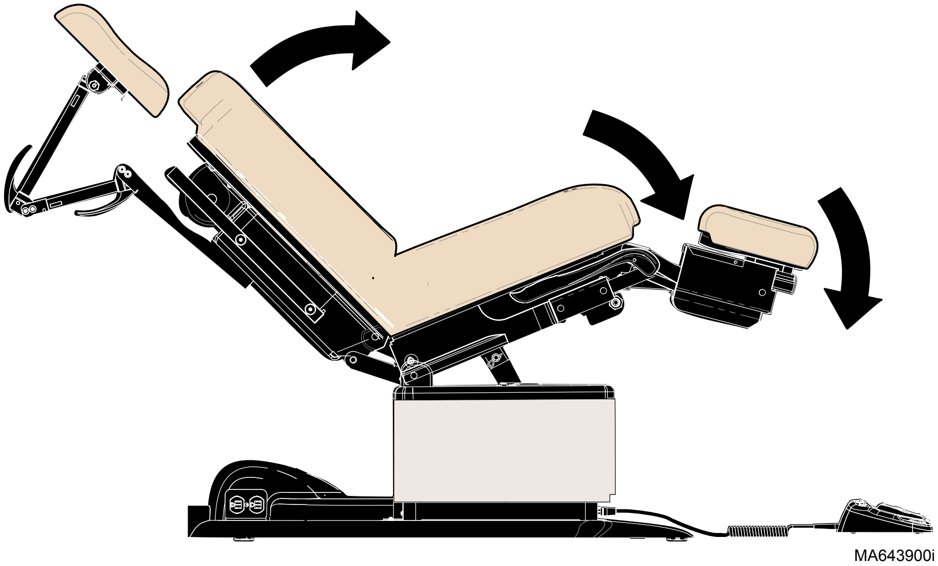
To activate the Quick Chair™ function....
Press and hold the Chair Position button.

What is "*Chair Position*"?

Base:	*all the way down*
Back:	*all the way up*
Tilt:	*all the way down*
Foot:	*all the way down*

How it works...
When the Quick Chair™ button is pressed and held, the PC Board activates all of the following functions:

Function	*Runs until...*
Base Down	Base Down limit switch is tripped
Back Up	Back Up limit switch is tripped
Tilt Down	Tilt Down limit switch is tripped
Foot Down	Foot Down limit switch is tripped



Models:	**630** (all)	**75** (-020/-021)
Serial Numbers:	all	all *(w/optional foot control)*

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Go To Table Of Contents

Next

Refer To:

Go To Page:

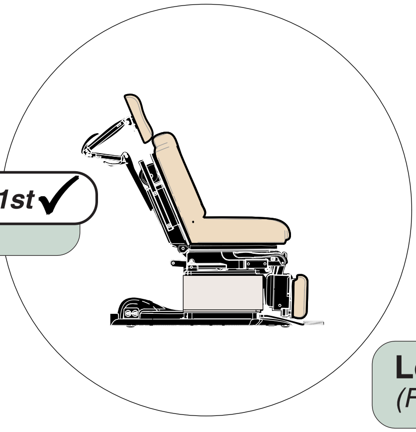
Hand Foot Controls B-6
Main PC Board B-40
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Quick Chair™ Function - continued

Problem: *When Quick Chair™ button is pressed & held, the table does not move.*

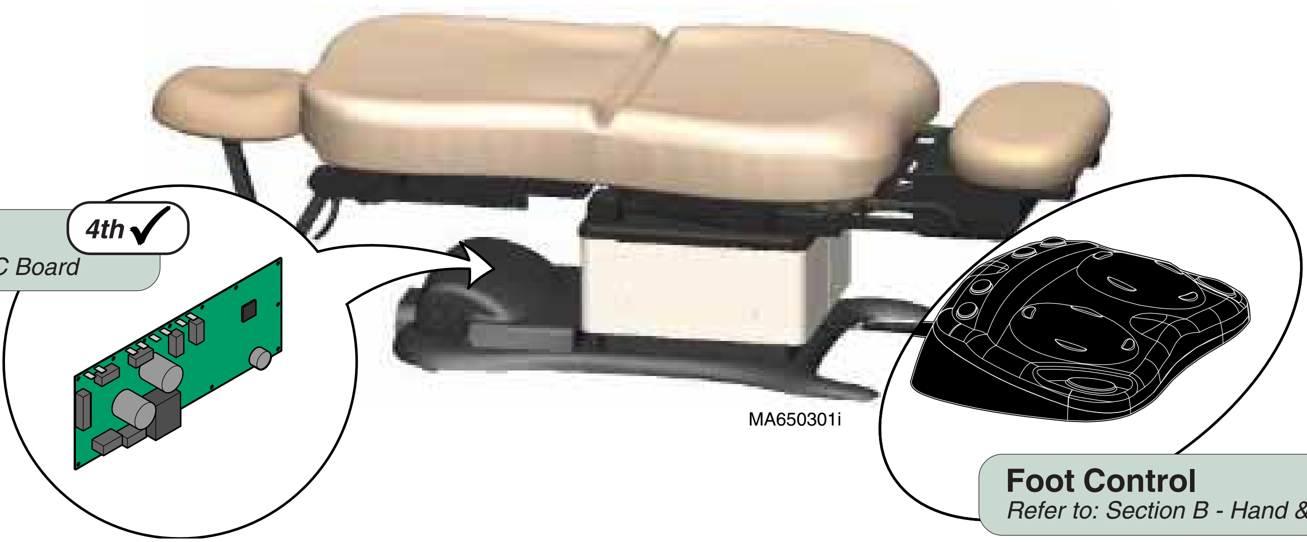
[All manual functions - OK]

Note: *If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)*



Is table already in Chair Position? *1st* ✓

Loose / Damaged Wire Connections *2nd* ✓
(Foot control to PC Board)



Foot Control *3rd* ✓
Refer to: Section B - Hand & Foot Controls

Main PC Board *4th* ✓
Refer to: Section B - Main PC Board

Models:	***630*** ***(all)***	***75*** ***(-020/-021)***
Serial Numbers:	all	all *(w/optional foot control)*

This page intentionally blank.

Operation & Troubleshooting

Table Receptacles *(optional - 115 VAC models only)*

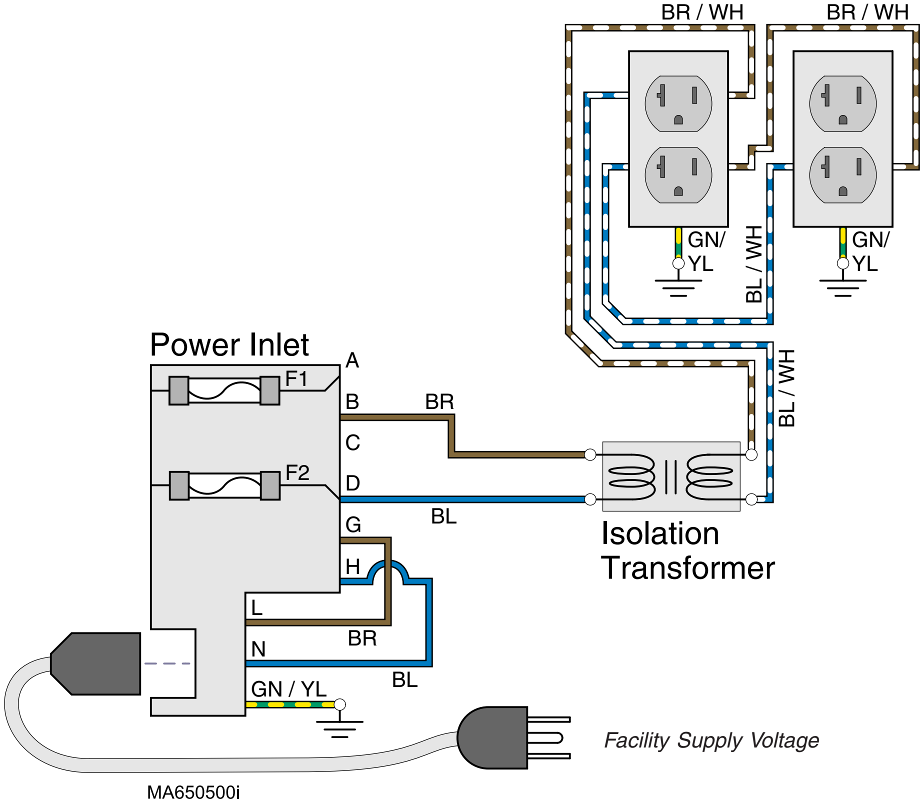
This illustration shows only the components that affect the table receptacle.

Troubleshooting
[Table Receptacles]

Go To Page:

Problem
No power at receptacles A-67

Only the wires that affect the table receptacles are shown.



Facility Supply Voltage

With the table's power cord properly connected, facility supply voltage *(115 VAC)* is supplied thru the cord to the power inlet.

Power Inlet

> **EQUIPMENT ALERT**
> The voltage setting displayed in the power inlet window must match facility supply voltage *(115 VAC)*.
> *[Remove fuse holder and rotate 180° to change voltage setting].*

Current flows thru two fuses in the power inlet, to the isolation transformer.

Isolation Transformer

> **NOTE**
> The isolation transformer separates the receptacles from the rest of the table's electrical system. This transformer is protected from overload by a thermal cutout feature. It will automatically reset when the transformer cools.

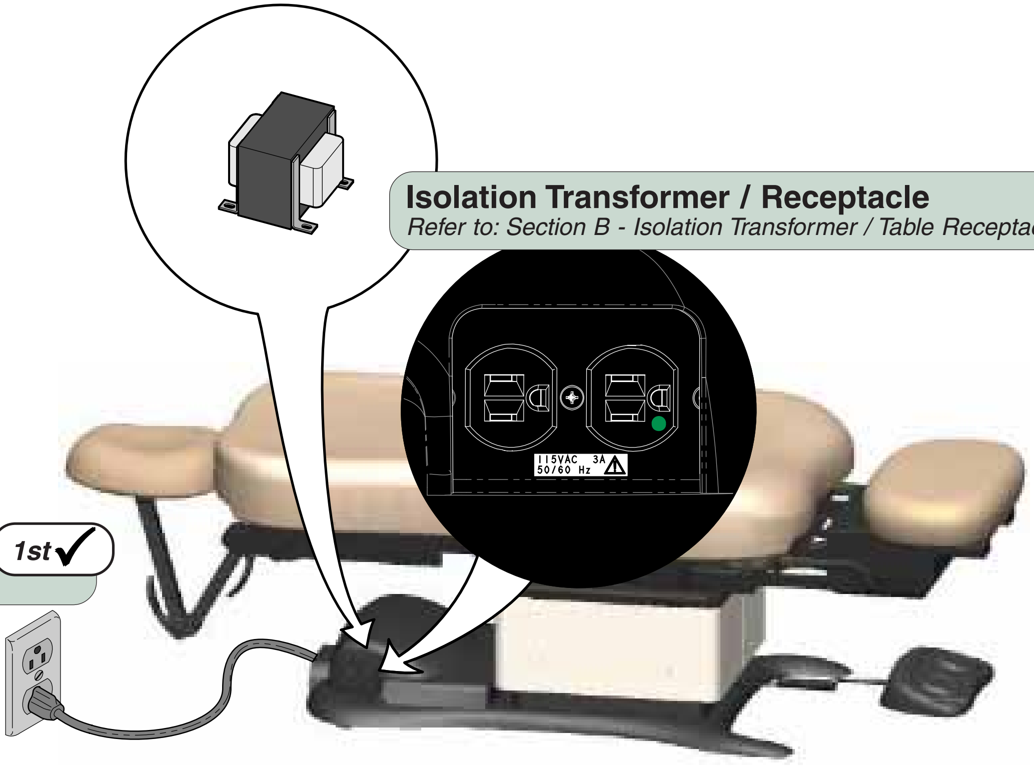
The isolation transformer provides 115 VAC to each of the table receptacles.

Table Receptacles - *continued*

Problem: *No power at receptacle(s).*

Refer To: **Go To Page:**

Isolation Transformer /
Table Receptacle B-29
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Isolation Transformer / Receptacle *3rd* ✓
Refer to: Section B - Isolation Transformer / Table Receptacle

Is there power to the table? *1st* ✓

Loose / Damaged Wire Connections *2nd* ✓
(between power inlet & receptacles)

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Next

Upholstery Heater System *(optional)*

This illustration shows only the components that affect the Upholstery Heater System.
A detailed description of current flow during this function also appears below.

Troubleshooting
[Upholstery Heater System]

Go To Page:

Problem **Page**
Heater Does Not Warm Up:
- *Heater light does not illuminate* A-69
- *Heater light illuminates* A-70

Heater Works Properly:
- *Heater light does not illuminate* A-71

Upholstery Heater Operation
115 VAC is supplied to the upholstery heater PC board thru the power inlet. Circuitry on the PC board converts 115 VAC to 12 VAC. Fuses F1 and F2 protect the circuit.

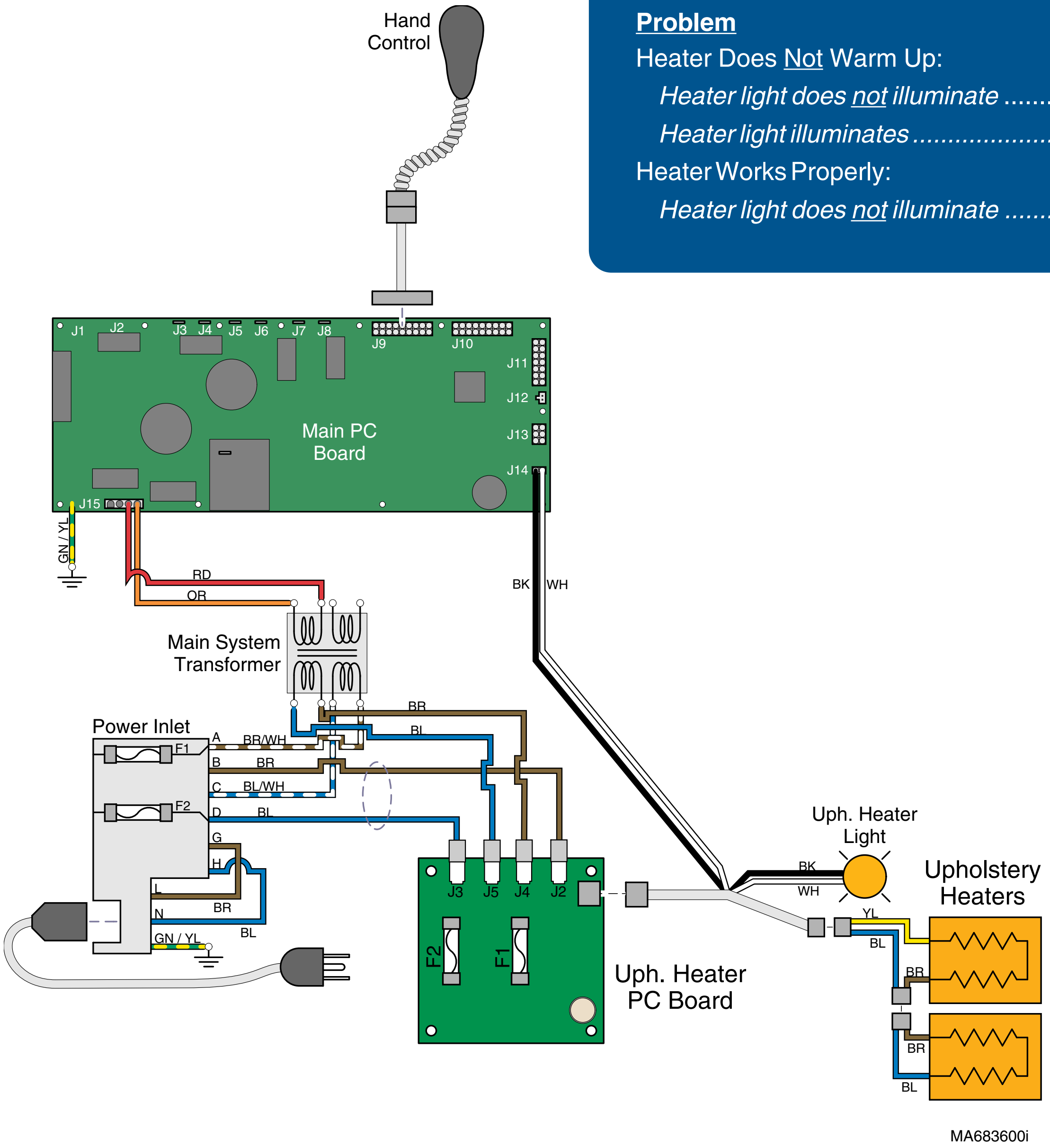
When the upholstery heater button on the hand control is pressed, 12 VAC is supplied to the upholstery heater.

Note
A timer on the PC board *(initiated when the uph. heater button is pressed)* automatically turns the heater OFF after 8 hours.

A potentiometer on the upholstery heater PC board allows a service technician to adjust the temperature up to 105° F (41° C).

A thermostat, located in the Back Heating Pad, opens at 131° F (55°C) +/- 10% removing power from both Back and Seat section heating elements.

Upholstery Heater runs until:
1. Upholstery heater button is pressed again.
2. 8 hour time limit is reached.
3. Fuse(s) on upholstery heater PC board opens (blows).


Hand Control
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
Main PC Board
GN / YL
RD
OR
BK
WH
Main System Transformer
BR
BL
Power Inlet
A
B
C
D
G
H
L
N
F1
F2
BR/WH
BR
BL/WH
BL
BR
GN / YL
BL
J3
J5
J4
J2
F2
F1
Uph. Heater PC Board
Uph. Heater Light
BK
WH
YL
BL
BR
BR
BL
Upholstery Heaters
MA683600i

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Next

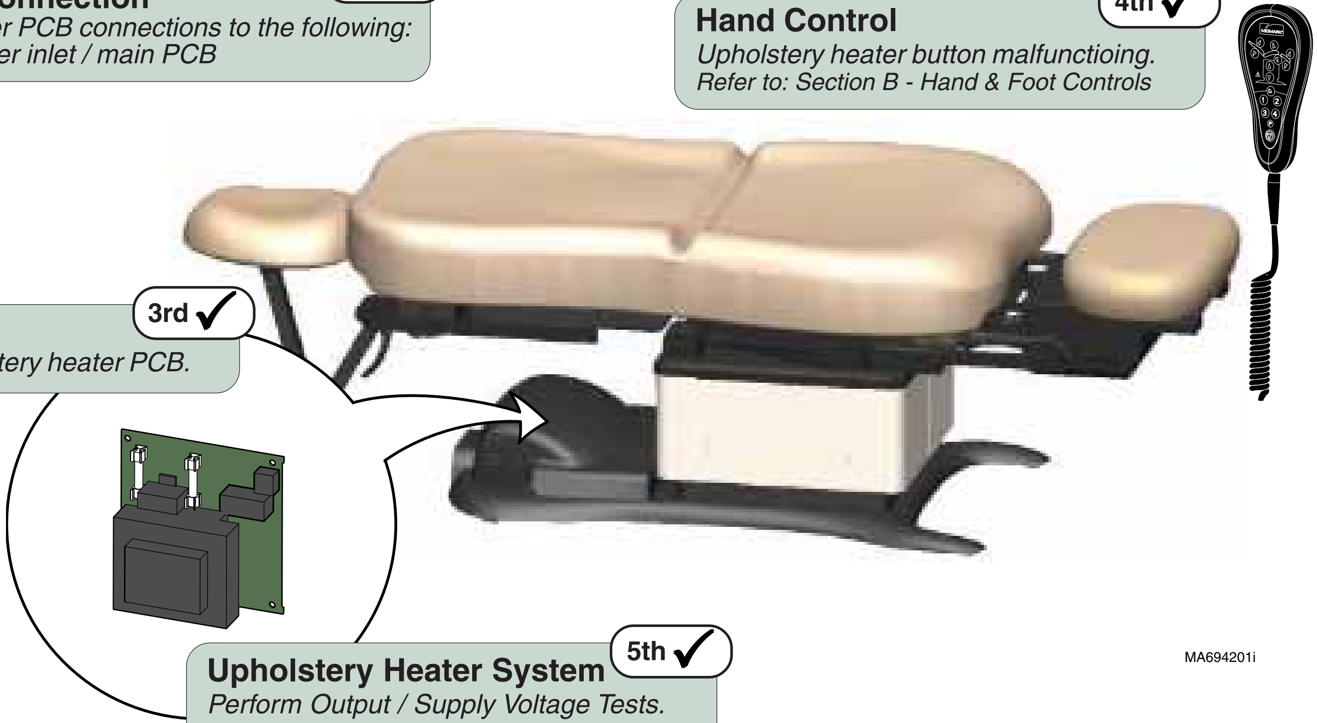
Upholstery Heater System - *continued*

Problem: *Heater does not warm up.* ***- and***
Heater light does not illuminate.

Refer To:

Go To Page:

Hand & Foot Controls B-6
Upholstery Heater System B-45
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



1st ✓
8-Hour Timer Expired
Press upholstery heater button to restart heater.

2nd ✓
Loose Wire Connection
Check uph. heater PCB connections to the following:
heater light / power inlet / main PCB

3rd ✓
Fuse(s)
Check fuses on upholstery heater PCB.

4th ✓
Hand Control
Upholstery heater button malfunctioing.
Refer to: Section B - Hand & Foot Controls

5th ✓
Upholstery Heater System
Perform Output / Supply Voltage Tests.
Refer to: Section B - Uph. Heater System

Models: ***630*** ***(-007)***
Serial Numbers: all

Refer To: **Go To Page:**

Upholstery Heater System B-45
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

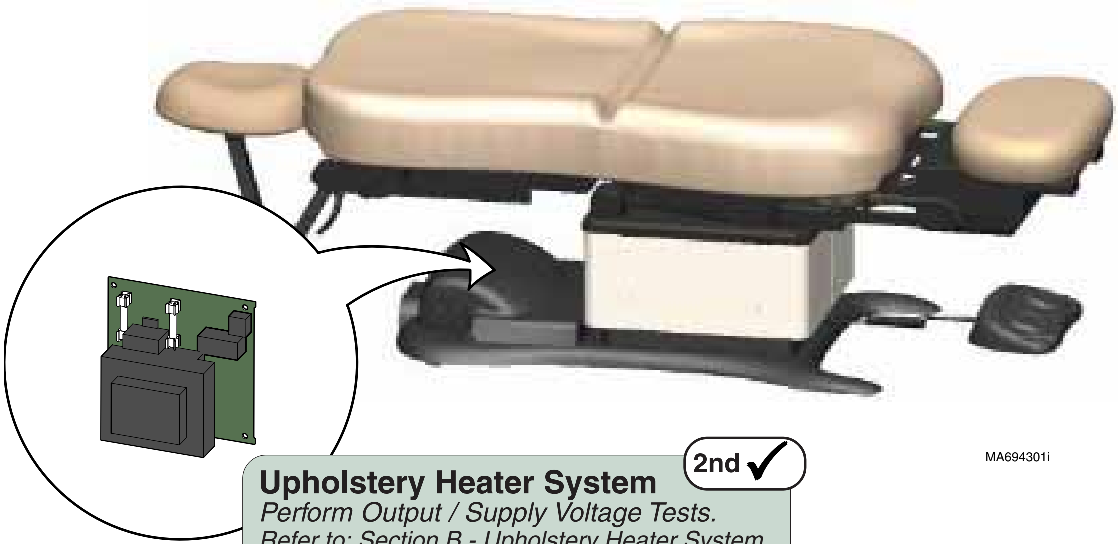
Upholstery Heater System - *continued*

Problem: *Heater does not warm up.* ***- but***
Heater light does illuminate.

Loose Wire Connection

1st ✓

Check the following connections:
Back & seat section heaters to uph. heater PCB.



Upholstery Heater System

2nd ✓

Perform Output / Supply Voltage Tests.
Refer to: Section B - Upholstery Heater System.

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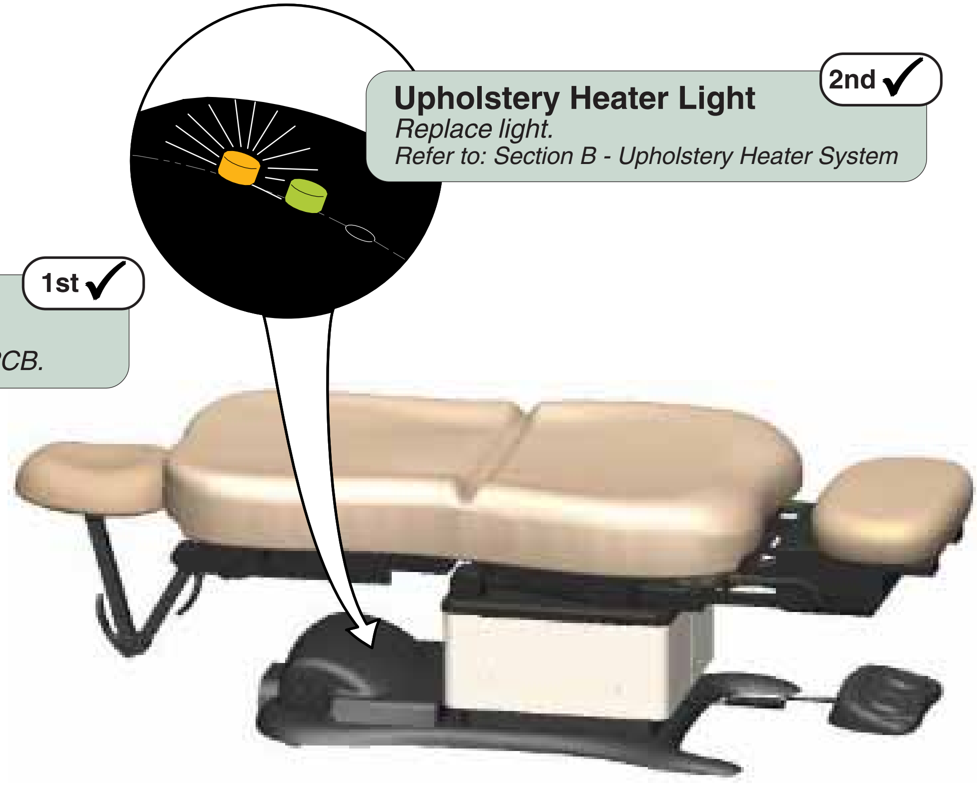
Go To Table Of Contents
Next

Upholstery Heater System - *continued*

Problem: *Heater works properly* ***- but***
Heater light does not illuminate

Refer To: **Go To Page:**
Upholstery Heater System B-45
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1



Upholstery Heater Light 2nd ✓
Replace light.
Refer to: Section B - Upholstery Heater System

Loose Wire Connection 1st ✓
Check the following connections:
Uph. heater light to uph. heater PCB.

Models: *630* *(-007)*
Serial Numbers: all

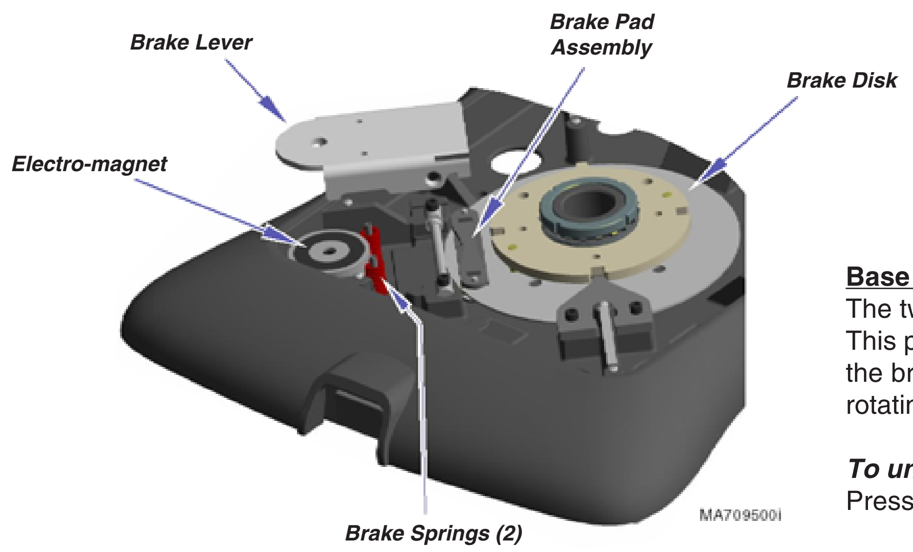
Back
Go To Table Of Contents
Next

Rotational Base Brake System *(optional)*

This illustration shows only the components that affect the Rotational Base Brake System. A detailed description of current flow during this function also appears below.

Troubleshooting
[Rotational Base Brake System]

Problem	Go To Page:
Base rotation will not unlock	A-73
Base rotation will not lock	A-74
Base "wobbles" when locked	A-75
Base grinds when rotating	A-75


Brake Lever
Brake Pad Assembly
Brake Disk
Electro-magnet
Brake Springs (2)
MA709500i

Base Rotation LOCKED:
The two brake springs press upward on the brake lever. This pivots the brake lever so that pressure is applied to the brake pad assembly. This prevents the brake disk from rotating.

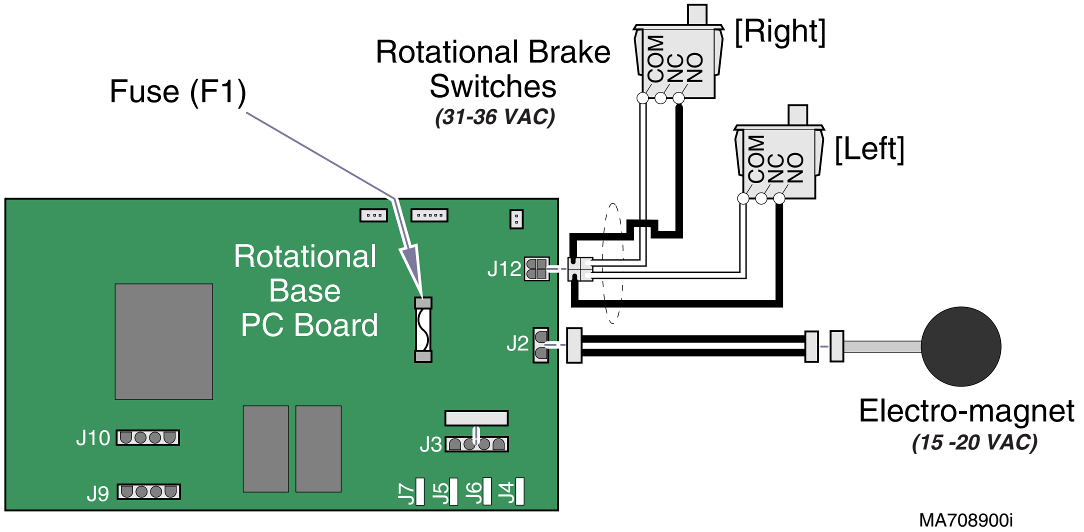
To unlock base rotation:
Press & release either brake pedal.

Base Rotation UNLOCKED:
The rotational base PC board supplies 31 - 36 VAC to the two normally closed brake switches. When either brake pedal is pressed & released, the corresponding brake switch opens. When the open switch is detected, the PC board supplies approximately 15 - 20 VAC to the electro-magnet thru the F! fuse.

When voltage is applied to the electro-magnet, the magnet's pull overpowers the brake springs. This removes pressure from the brake pad asembly allowing the brake disk to rotate.

To lock base rotation:
Press & release either brake pedal.

Note: Base automatically locks in place after 2 minutes.


Fuse (F1)
Rotational Brake Switches
(31-36 VAC)
COM
NC
NO
[Right]
COM
NC
NO
[Left]
Rotational Base PC Board
J12
J2
J10
J9
J3
J7
J5
J6
J4
Electro-magnet
(15 -20 VAC)
MA708900i

Back
Go To Table Of Contents
Next

Rotational Base Brake System - continued

Problem: *Base rotation will not unlock.*

Refer To:

	Go To Page:
Rotational Base Brake System	B-51
Wiring Diagrams	D-1

Check both brake pedals

1st ✓

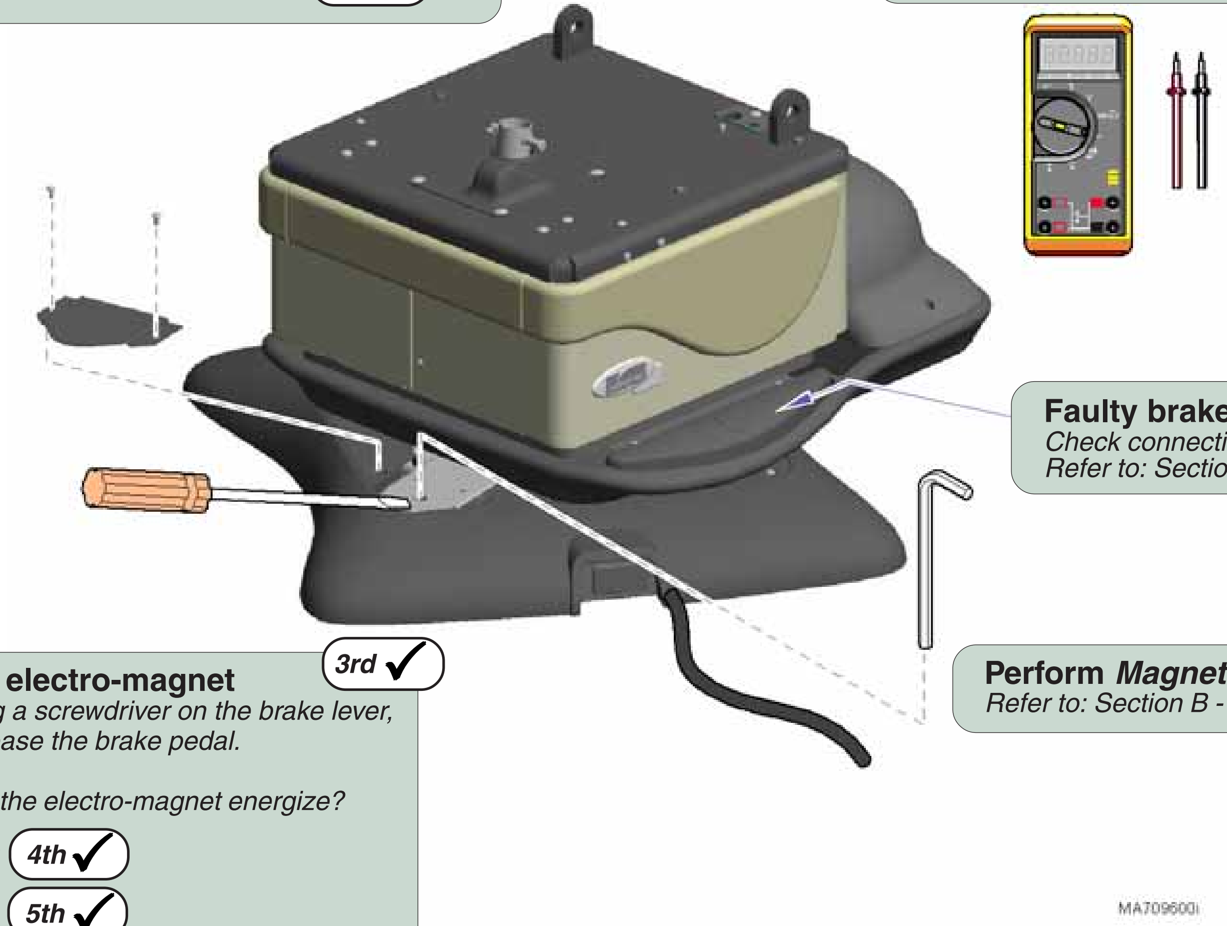
If one brake pedal unlocks the base, go to: *2nd* ✓

If neither pedal unlocks the base, go to: *3rd* ✓

Check Rotational Base PC Board Fuse

5th ✓

If fuse is OK, perform Rotational Brake Electrical Test
Refer to: Section B - Rotational Base Brake System



Faulty brake pedal switch

2nd ✓

Check connections / replace switch if necessary.
Refer to: Section B - Rotational Base Brake System

Check the electro-magnet

3rd ✓

While holding a screwdriver on the brake lever, press & release the brake pedal.

Can you feel the electro-magnet energize?

If YES, go to: *4th* ✓

If NO, go to: *5th* ✓

Perform *Magnet Position Adjustment*

4th ✓

Refer to: Section B - Rotational Base Brake System

Models: **Serial Numbers:**	***230*** ***(-003)*** all	***630*** ***(-005 & -006)*** all

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Next

Rotational Base Brake System - continued

Problem: Base rotation will not lock.

Refer To: Go To Page:

Rotational Base Brake System B-51
Wiring Diagrams D-1

Unplug table power cord

1st ✓

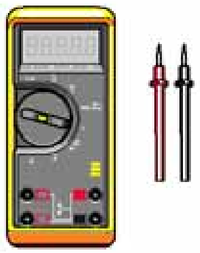
If base rotation locks, go to: 2nd ✓

If base does not lock, go to: 3rd ✓

Perform *Rotational Brake Electrical Test*

2nd ✓

Refer to: Section B - Rotational Base Brake System



Inspect mechanical brake components.

3rd ✓

Refer to: Section B - Rotational Base Brake System (Brake Lever Removal)

Models:	230 (-003)	630 (-005 & -006)
Serial Numbers:	all	all

Rotational Base Brake System - *continued*

Problem: *Base "wobbles" when locked.* - ***and / or***
Base makes grinding noise when rotating

Refer To: **Go To Page:**

Rotational Base Brake System	B-51
Wiring Diagrams	D-1

Debris between upper & lower castings
1st ✓

Without separating the base castings, remove any debris.

Loose hub screws
2nd ✓

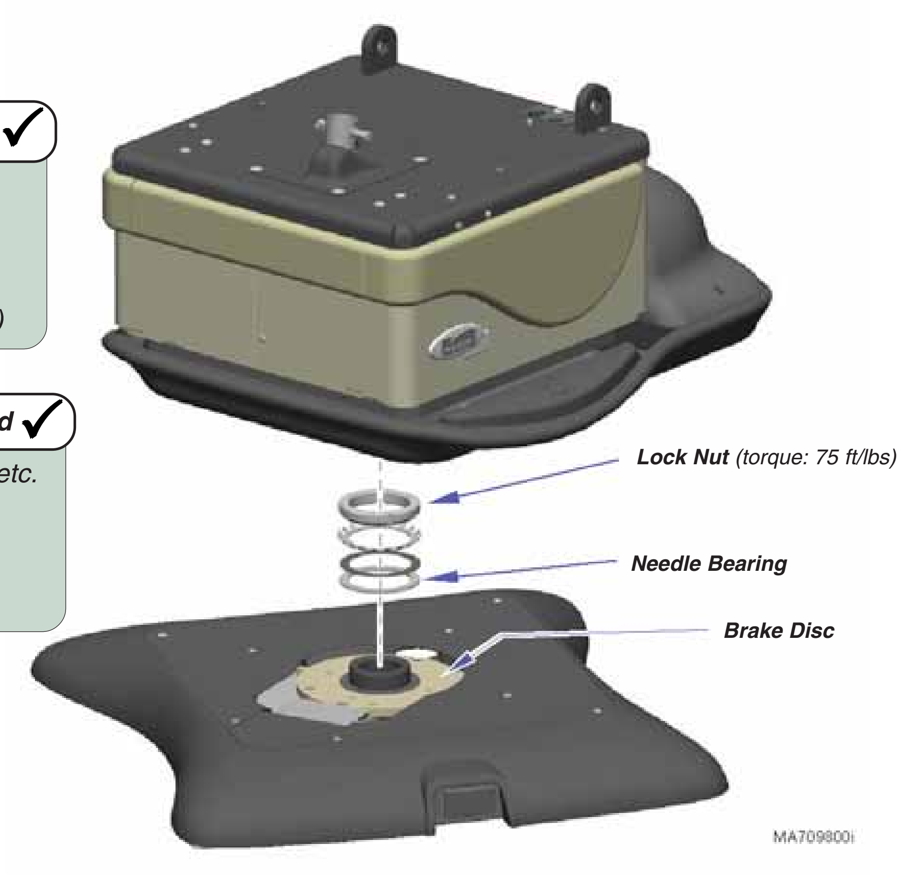
Tighten four screws securing the upper & lower castings.

For access instructions refer to:
Section B - Rotational Base Brake System
(Separating Upper & Lower Base Castings)

Inspect rotation bearings / brake disc
3rd ✓

Inspect needle bearing & brake disc for damage, debris, etc.
Lock nut must be tightened to 75 ft/lbs.

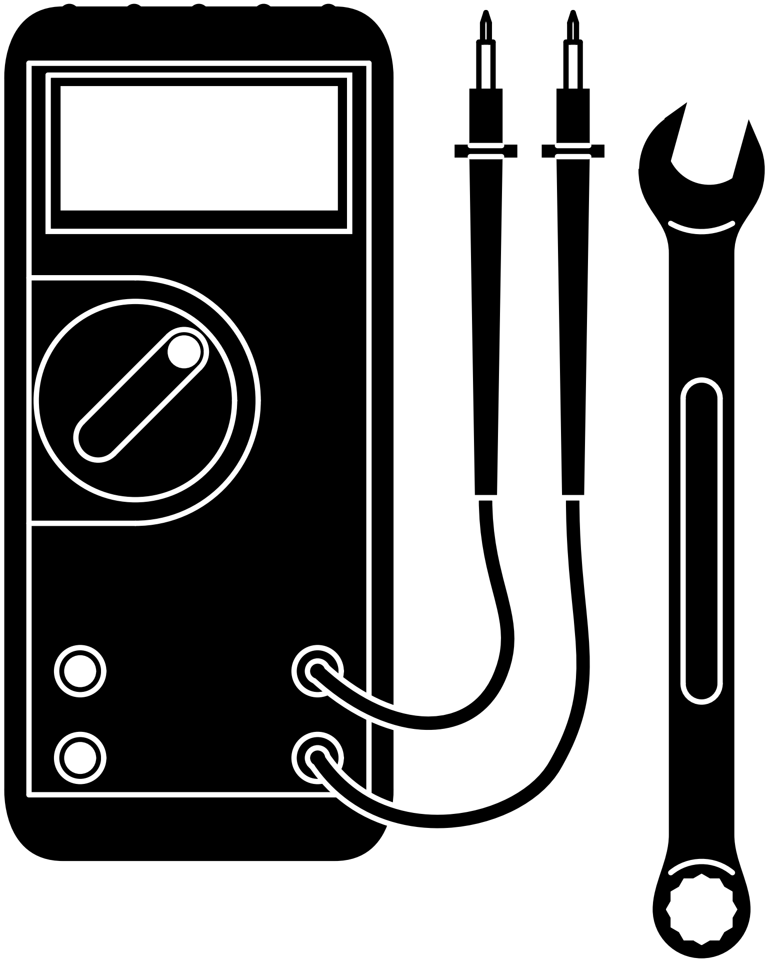
For access instructions refer to:
Section B - Rotational Base Brake System
(Separating Upper & Lower Base Castings)



Models: *Serial Numbers:*	***230*** *(-003)* all	***630*** *(-005 & -006)* all

Section B

Component Testing & Repair



Components

Go To Page:

Primary Fuses B-2
Limit Switches B-3
Hand / Foot Control B-6
Base Actuator B-11
Back Actuator B-17
Tilt Actuator B-21
Foot Actuator B-25
Gas Springs.. B-28
Isolation Transformer /
Table Receptacles............................ B-29
Main System Transformer B-30
Position Sensors B-32
Main PC Board B-40
Upholstery Heater System.................... B-45
Headrest Mechanism B-50
Rotational Base Brake System B-51

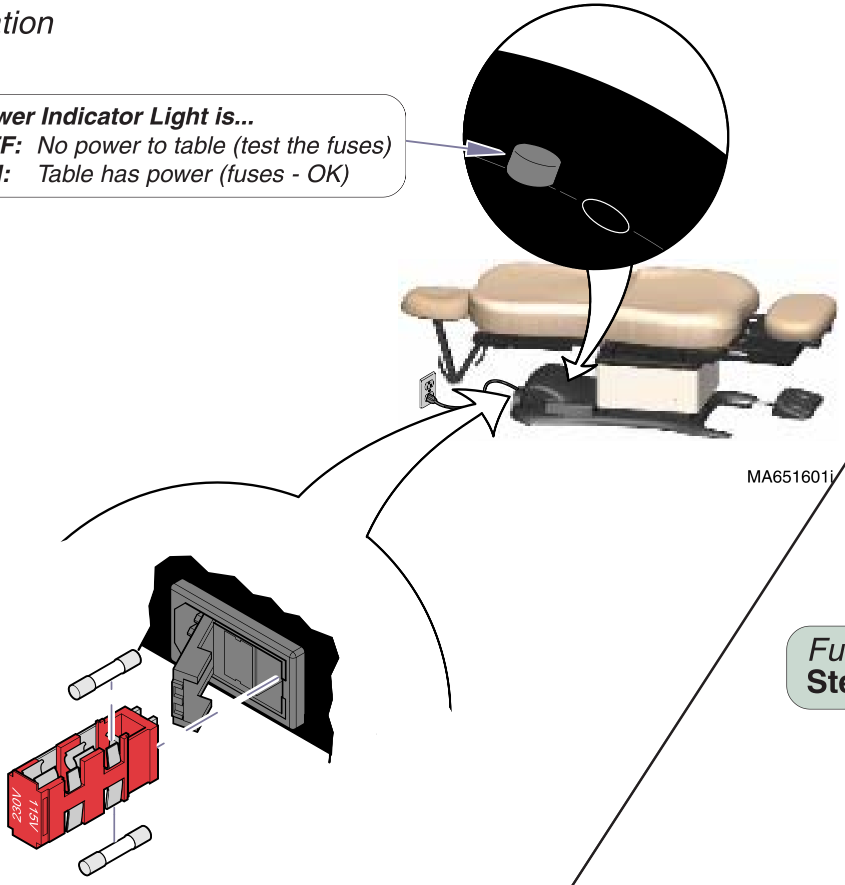
Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitve. ex. B-2)

Back
Go To Table Of Contents
Next

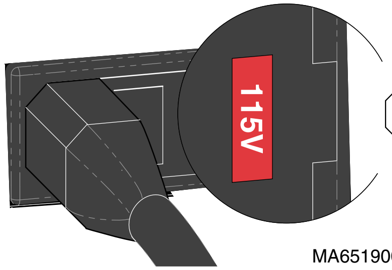
Primary Fuses

Location

If Power Indicator Light is...
OFF: *No power to table (test the fuses)*
ON: *Table has power (fuses - OK)*



MA651601i



MA651900i

Equipment Alert
Voltage setting must match facility supply voltage.
Incorrect setting will result in damage to the table.

Primary Fuses **Go To Page:**

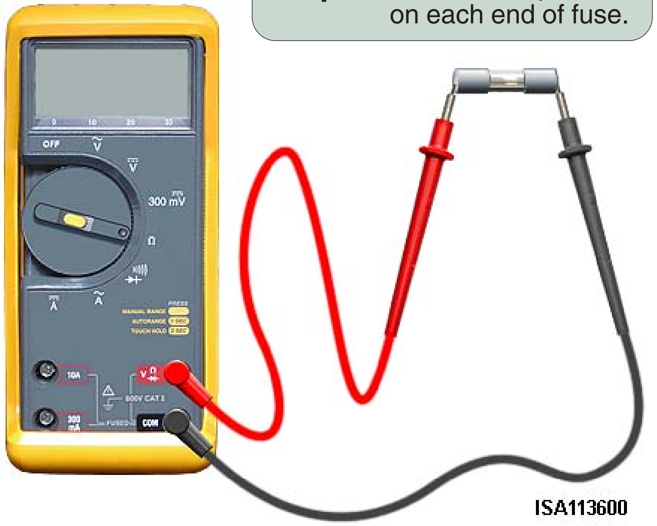
Location B-2
Fuse Test B-2
Wiring Diagrams D-1

Fuse Rating **6.3A, 250V**
Type T, 5 x 20mm
Part Number **015-0346-40**

Fuse Test

Fuse Test
Step 1: Set meter to **200 Ω.**

Fuse Test
Step 2: Place meter probes on each end of fuse.



ISA113600

Meter Reading	*Status*	*Required Action*
OL	👎	Replace **both** fuses.
less than 5 Ω	👍	Fuse - OK

Models: ***ALL***
Serial Numbers:

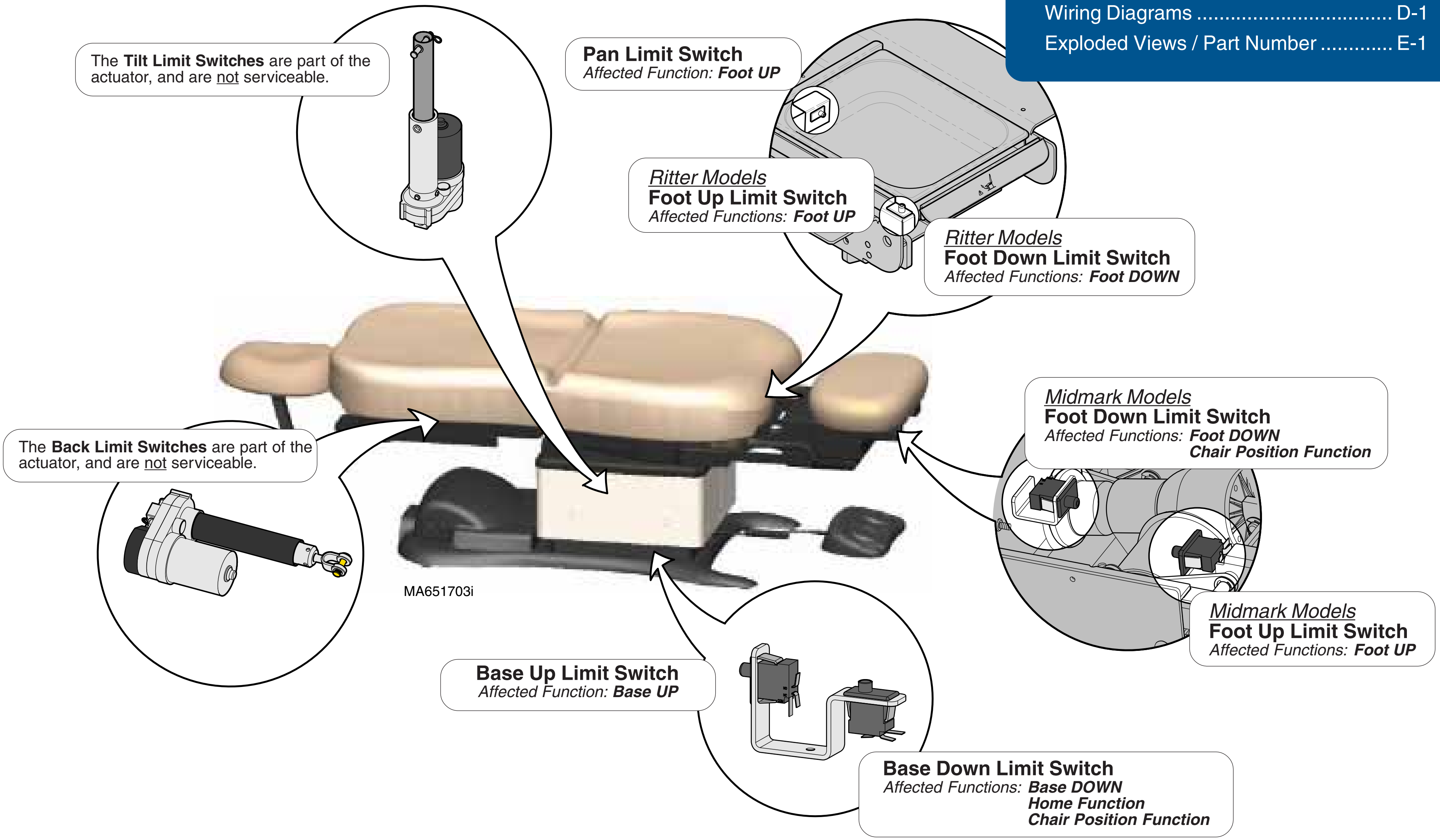
Limit Switches

Location

Limit Switches

Go To Page:

Location B-3
Limit Switch / Harness Test B-4
Access Procedures C-1
Wiring Diagrams D-1
Exploded Views / Part Number E-1



The **Tilt Limit Switches** are part of the actuator, and are not serviceable.

Pan Limit Switch
Affected Function: ***Foot UP***

Ritter Models
Foot Up Limit Switch
Affected Functions: ***Foot UP***

Ritter Models
Foot Down Limit Switch
Affected Functions: ***Foot DOWN***

The **Back Limit Switches** are part of the actuator, and are not serviceable.

Midmark Models
Foot Down Limit Switch
Affected Functions: ***Foot DOWN***
Chair Position Function

Midmark Models
Foot Up Limit Switch
Affected Functions: ***Foot UP***

Base Up Limit Switch
Affected Function: ***Base UP***

Base Down Limit Switch
Affected Functions: ***Base DOWN***
Home Function
Chair Position Function

Models: ***ALL***
Serial Numbers:

Back
Go To Table Of Contents
Next

Component Testing & Repair

Limit Switches - continued

Refer To:
Limit Switch Continuity Test B-5
Go To Page:

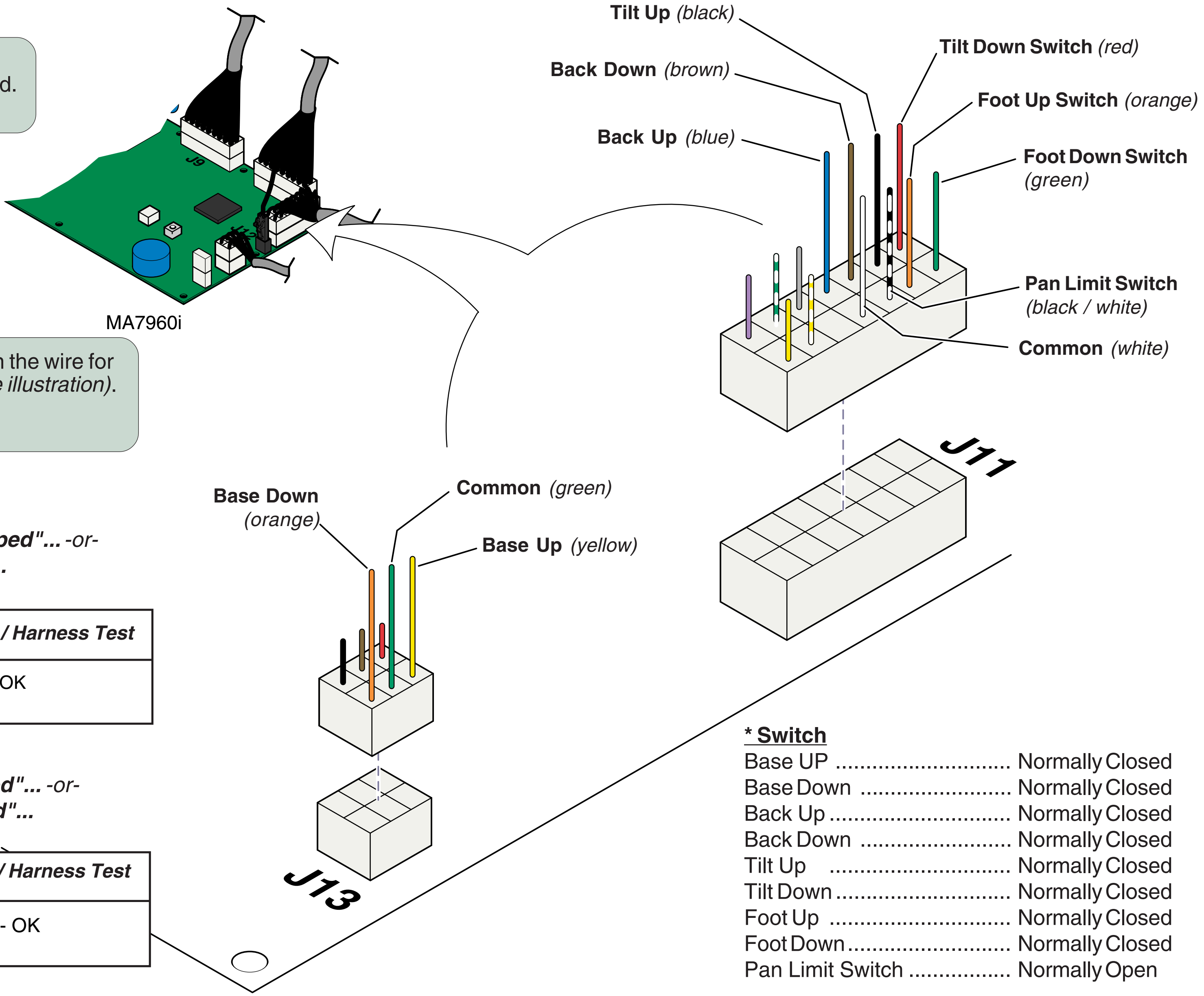
PC Board Harness Test

Step 1: Disconnect appropriate harness from main PC board. *(see illustration)*

Step 2: Place one meter probe on the common wire. *(see illustration)*

Step 3: Place other meter probe on the wire for the appropriate switch *(see illustration)*.

Note: Check switch "tripped" & "untripped".


J9
J13
Tilt Up (black)
Back Down (brown)
Back Up (blue)
Tilt Down Switch (red)
Foot Up Switch (orange)
Foot Down Switch (green)
Pan Limit Switch (black / white)
Common (white)
J11
Base Down (orange)
Common (green)
Base Up (yellow)
J13

MA7960i

Normally CLOSED switches* "untripped"... -or-
Normally OPEN switches* "tripped"...

Meter Reading	*Req'd Action*
OL	Perform ***Limit Switch / Harness Test***
less than 10 Ω	Limit switch / harness - OK Test actuator.

Normally CLOSED switches* "tripped"... -or-
Normally OPEN switches* "untripped"...

Meter Reading	*Req'd Action*
less than 10 Ω	Perform ***Limit Switch / Harness Test***
OL	Limit switch / harness - OK Test actuator.

*** Switch**

Base UP	Normally Closed
Base Down	Normally Closed
Back Up	Normally Closed
Back Down	Normally Closed
Tilt Up	Normally Closed
Tilt Down	Normally Closed
Foot Up	Normally Closed
Foot Down	Normally Closed
Pan Limit Switch	Normally Open

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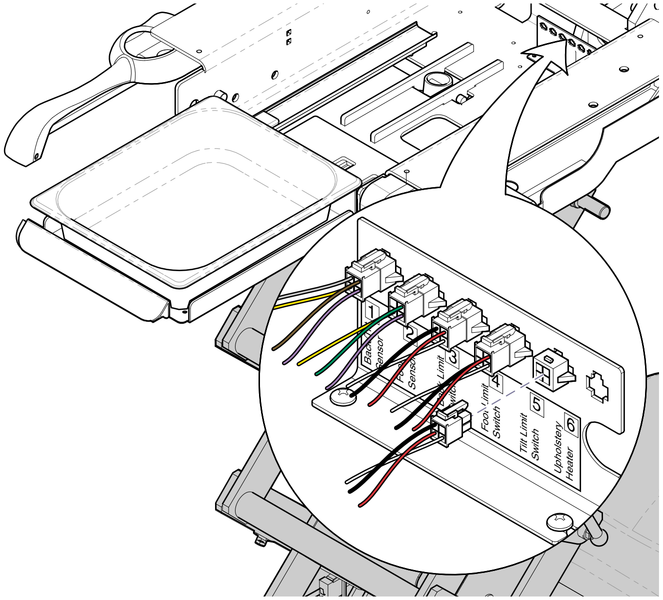
Next

Limit Switches - *continued*

Limit Switch Harness Test

Note: *This test is for the Foot, Tilt, & Back functions only.*
For Base function, perform Limit Switch Continuity Test.

Step 1: Unplug the appropriate limit switch harness.



Step 2: Measure continuity,

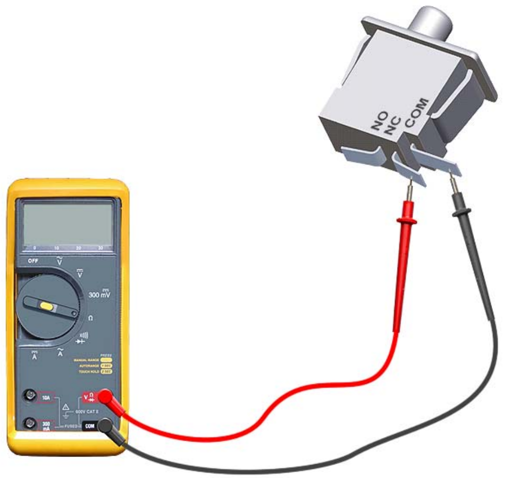
MA8289i

	Meter reading should be...
Actuator Full Up	White to Black - Open White to Red - Closed
Actuator Full Down	White to Black - Closed White to Red - Open
Actuator Midway Point	White to Black - Closed White to Red - Closed

Limit Switch Continuity Test

Attention
The Back & Tilt limit switches are part of the actuator, and are not serviceable.

Step 1: Tag & disconnect wires from switch.



Step 2: Place one meter probe on ***COM*** terminal.
Place other probe on the ***NC*** or ***NO*** terminal.
(depending on the switch)*

Note: *Check switch 'tripped' and 'untripped'.*

Normally CLOSED switch* "tripped"... *-or-*
Normally OPEN switch* "untripped"...

Meter Reading	*Status*	*Required Action*
OL	👍	Switch - OK. Replace harness
less than 5 Ω	👎	Replace switch

Normally CLOSED switch* "untripped"... *-or-*
Normally OPEN switch* "tripped"...

Meter Reading	*Status*	*Required Action*
OL	👎	Replace switch
less than 5 Ω	👍	Switch - OK. Replace harness

Component Testing & Repair

Hand & Foot Controls

Isolating a Malfunction

Go To Page:

Hand & Foot Controls

Isolating a Malfunction B-6
Hand / Foot Control Test B-7
Control Cord Continuity Test B-8

Repair Procedures:

Hand Control B-9
Foot Control B-10
Wiring Diagrams D-1

Exploded View / Part Numbers:

Foot Control (Disc-style) E-20*
Foot Control (Linear-style) E-21
Hand Control E-22

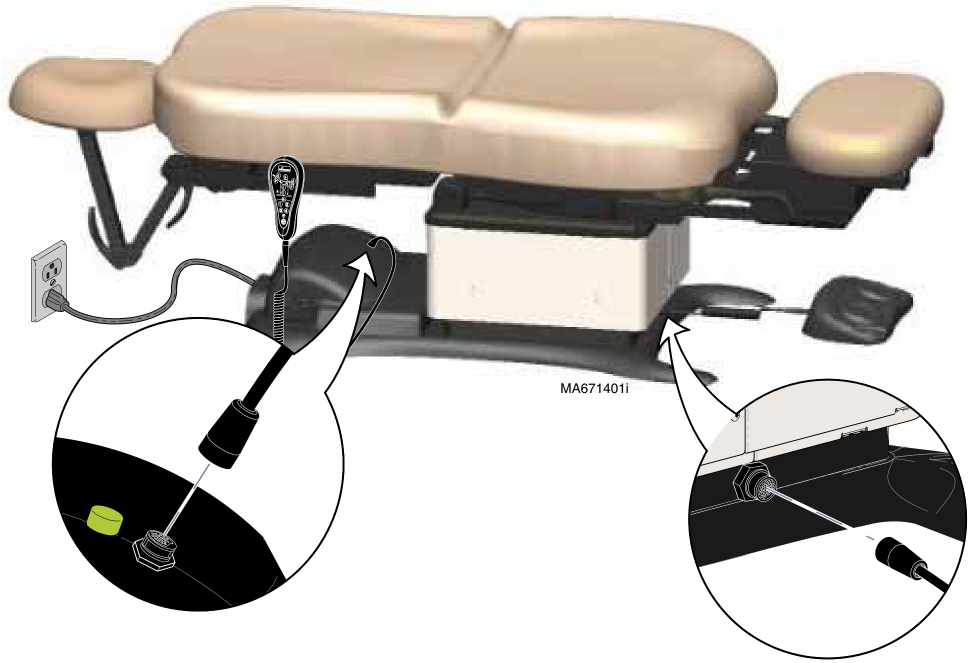
NOTE: Older Ritter models only have one connection port. Go directly to Hand / Foot Control Test.

To isolate a malfunction...
Plug the hand / foot control into the other connection port.

Does the hand / foot control work properly?

If **YES**, replace the wire harness at the malfunctioning connection port. (Refer to *Wiring Diagrams* for part number).

If **NO**, perform the *Hand / Foot Control Test*.

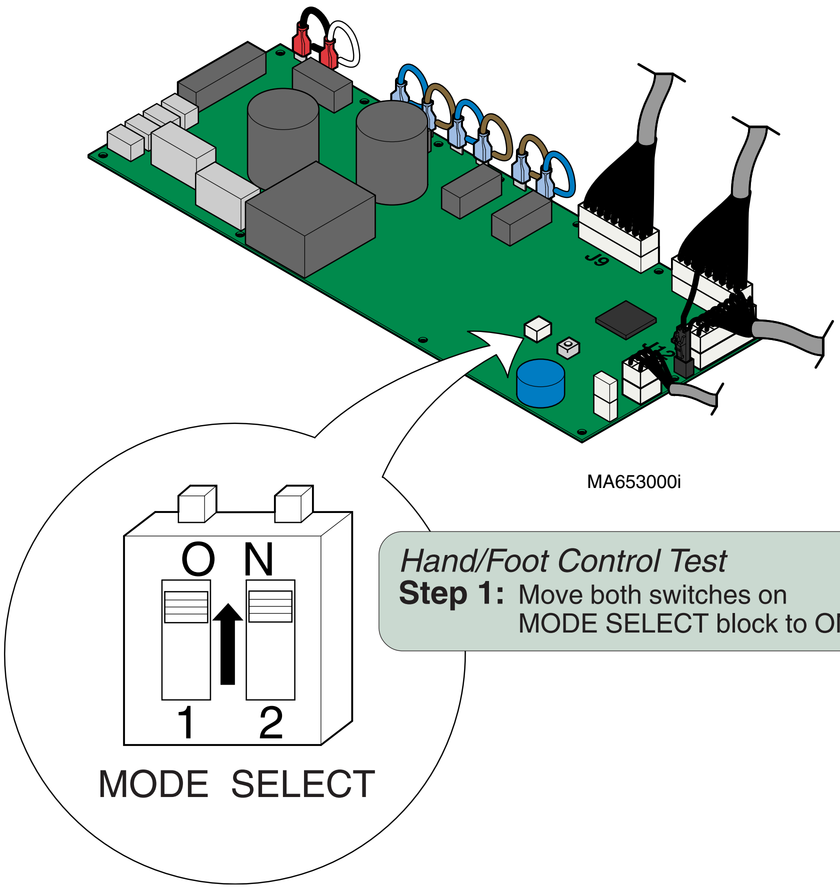


Hand & Foot Controls - *continued*

Hand / Foot Control Test

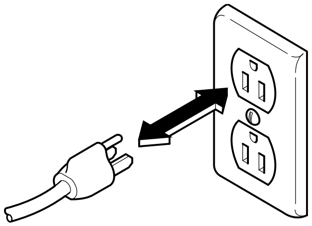
Refer To: **Go To Page:**

Control Cord Test B-8
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3



MA653000i

Hand/Foot Control Test
Step 1: Move both switches on MODE SELECT block to ON.

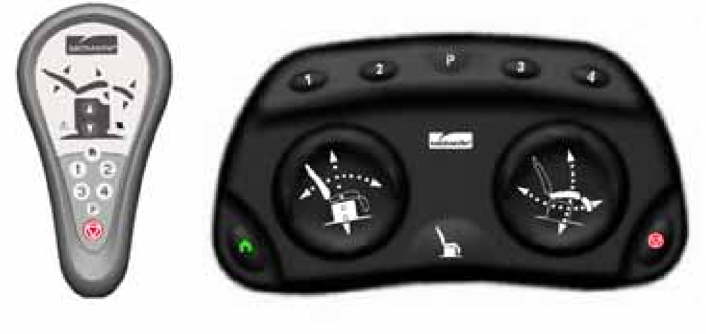


Hand/Foot Control Test
Step 2: Unplug table *(to reset PC Board)*. Plug table back in.

Hand/Foot Control Test
Step 3: One at a time, press & hold each button on the hand / foot control.

Do you hear"beeps" each time a button is pressed?

If **YES**, that button is functioning properly.
If **NO**, perform the *Control Cord Test*.



ATTENTION!
To return to normal operation...
A. Move MODE SELECT block switches back to original position.
B. Unplug table (to reset board).
C. Plug table back in.

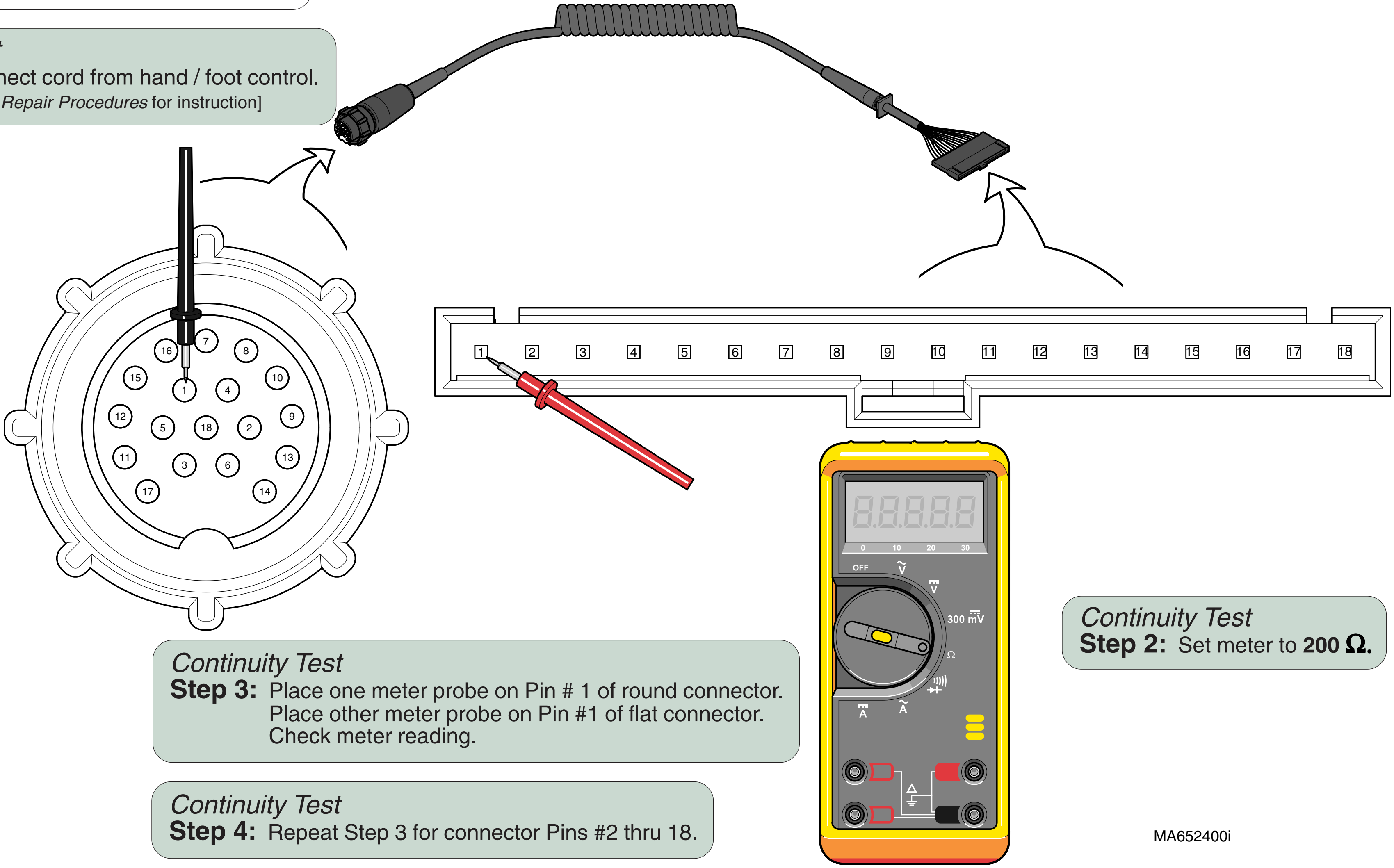
Hand & Foot Controls - *continued*

Control Cord Test

Attention
The hand & foot control cords are interchangeable.
If a working cord is available, switch the cords to test.
If one is not available, perform the Continuity Test.

Meter Reading	*Status*	*Required Action*
ALL pins ***less than 100 Ω***	👍	Cord - OK [Replace touch pad]
ANY pin(s) ***OL***	👎	Replace control cord.

Continuity Test
Step 1: Disconnect cord from hand / foot control.
[Refer to *Repair Procedures* for instruction]


16
7
8
15
10
1
4
12
9
5
18
2
11
13
3
6
17
14
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
8.8.8.8.8
0 10 20 30
OFF
V
300 mV
Ω
A
MA652400i

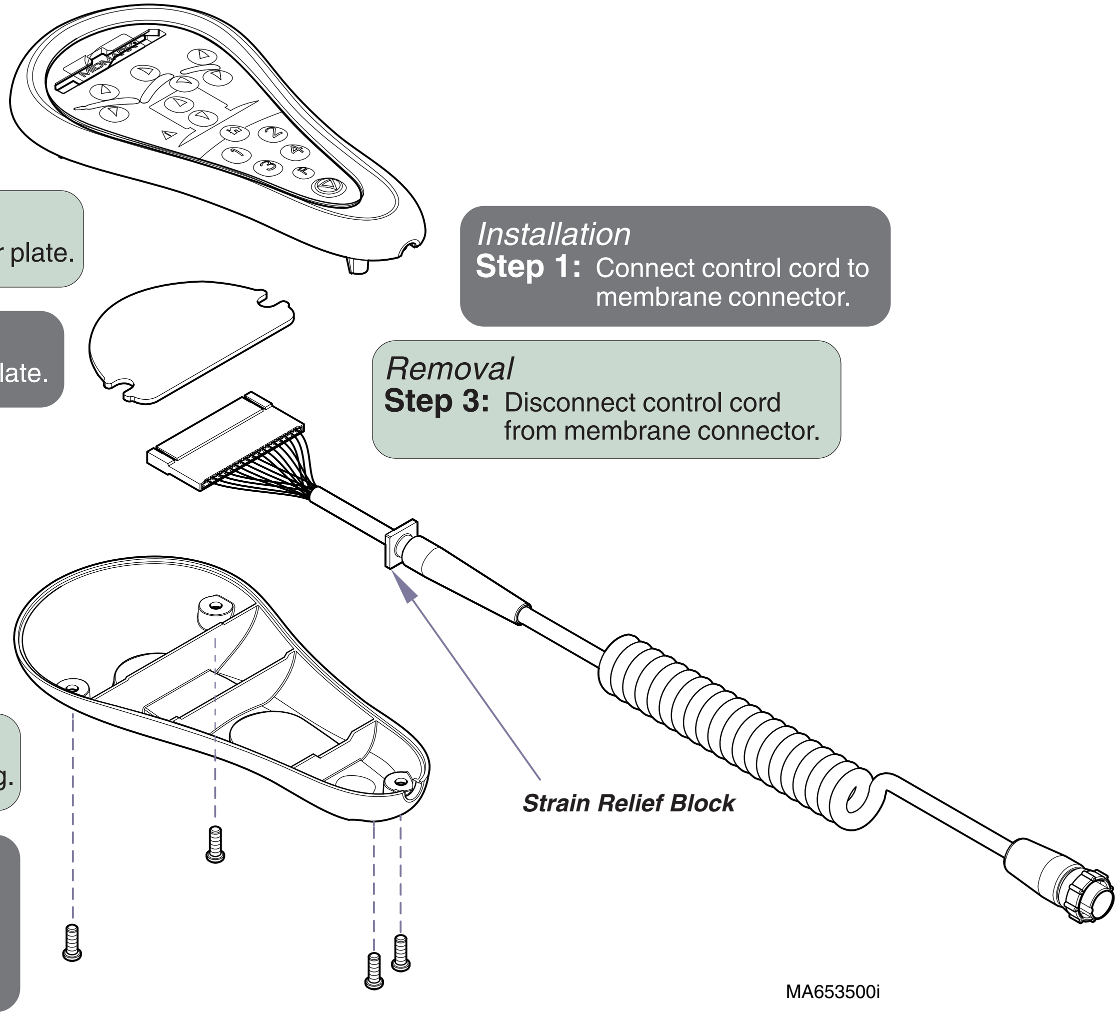
Continuity Test
Step 2: Set meter to **200 Ω.**

Continuity Test
Step 3: Place one meter probe on Pin # 1 of round connector.
Place other meter probe on Pin #1 of flat connector.
Check meter reading.

Continuity Test
Step 4: Repeat Step 3 for connector Pins #2 thru 18.

Hand & Foot Controls - continued

Hand Control Repair Procedure



Removal
Step 1: Remove back housing.

Removal
Step 2: Remove retainer plate.

Removal
Step 3: Disconnect control cord from membrane connector.

Installation
Step 1: Connect control cord to membrane connector.

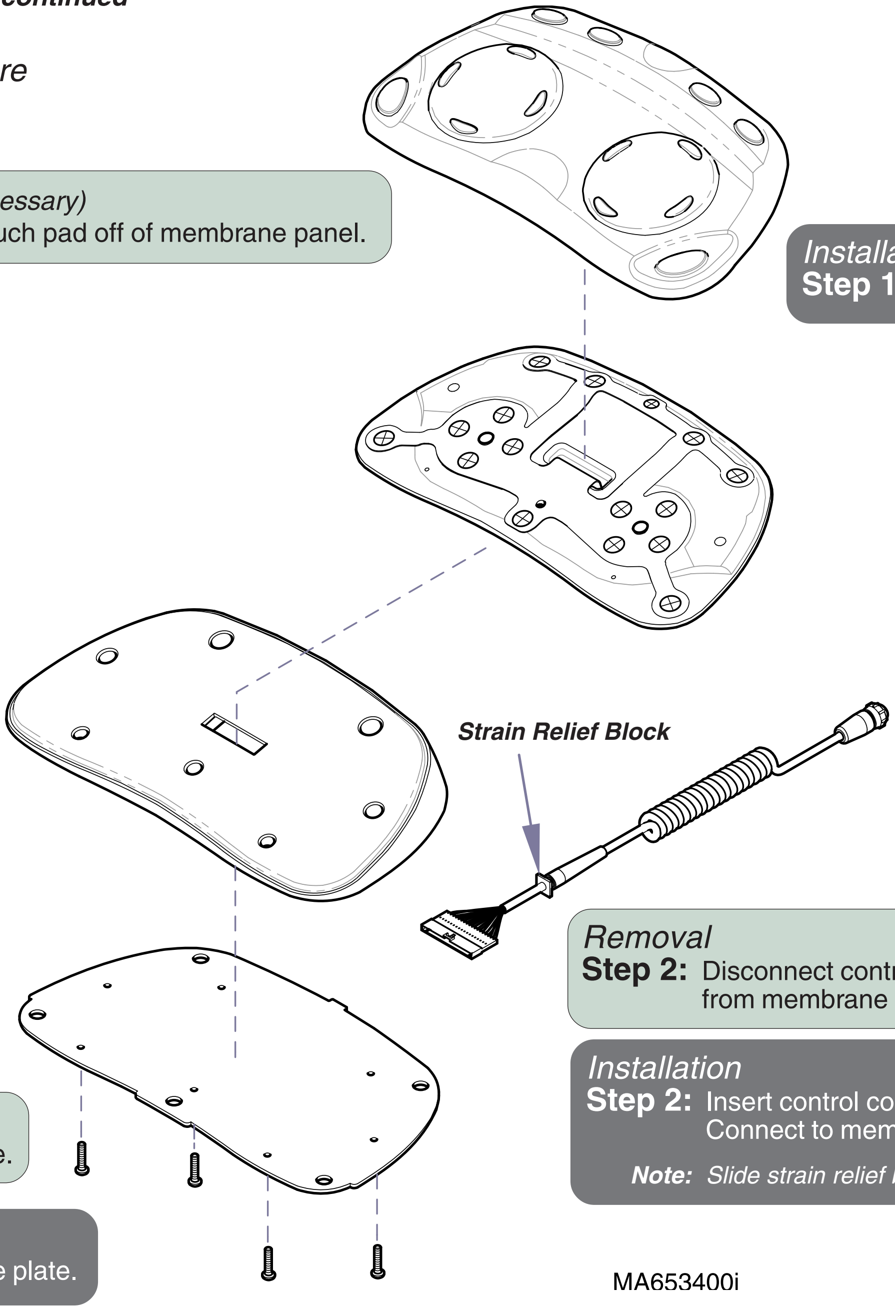
Installation
Step 2: Position retainer plate.

Installation
Step 3: Install back housing.

Note: *Position strain relief block (on cord) so that it is held in position when the back housing is installed.*

Hand & Foot Controls - continued

Foot Control Repair Procedure



Removal (if necessary)
Step 3: Peel touch pad off of membrane panel.

Installation (if necessary)
Step 1: Install touch pad onto membrane panel.

Removal
Step 2: Disconnect control cord from membrane connector.

Installation
Step 2: Insert control cord thru hole in base. Connect to membrane connector.

Note: *Slide strain relief block (on cord) into slot on base.*

Removal
Step 1: Remove base plate.

Installation
Step 3: Install base plate.

Base Actuator

Isolating a Malfunction

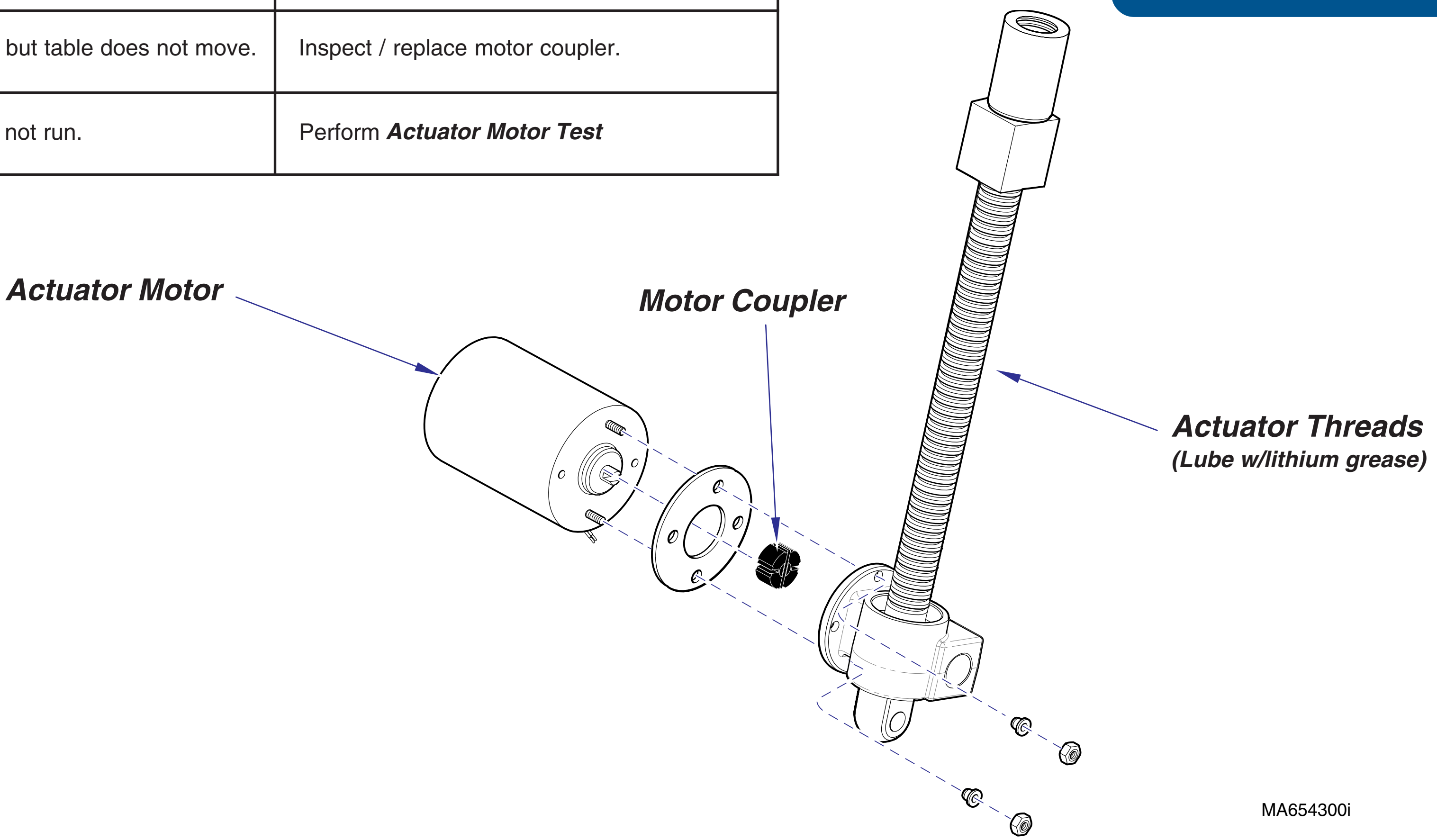
This illustration shows the three seviceable components of the base actuator.
Use the table below to isolate the malfunction.

Go To Page:

Base Actuator

Isolating a Malfunction B-11
Actuator Motor Test B-12
PC Board Test B-13
Motor / Motor Coupler Replacement B-14
Actuator Removal B-15
Actuator Installation B-16
Wiring Diagrams D-1
Exploded View / Part Numbers E-24

Problem	***Required Action***
Motor runs, but makes grinding noise.	Clean / lube actuator threads. Replace actuator if necessary.
Motor runs, but table does not move.	Inspect / replace motor coupler.
Motor does not run.	Perform ***Actuator Motor Test***



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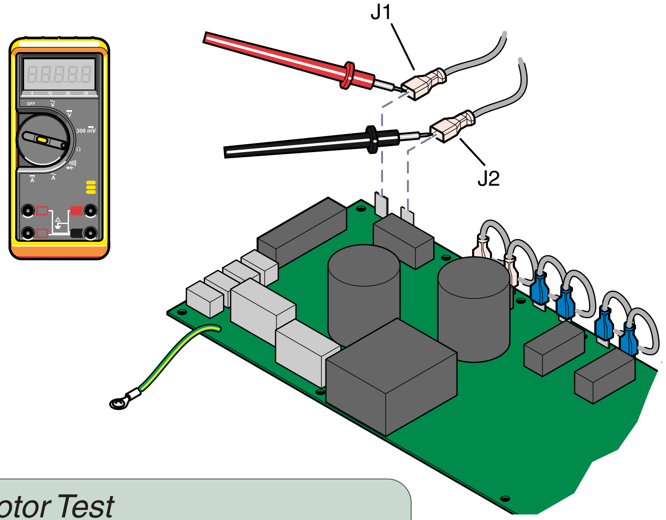
Next

Base Actuator - *continued*

Actuator Motor Test

Actuator Motor Test
Step 1: Tag, then disconnect base actuator wires *(J1 & J2)*.



Actuator Motor Test
Step 2: Place meter probes on actuator wires. Check meter reading.

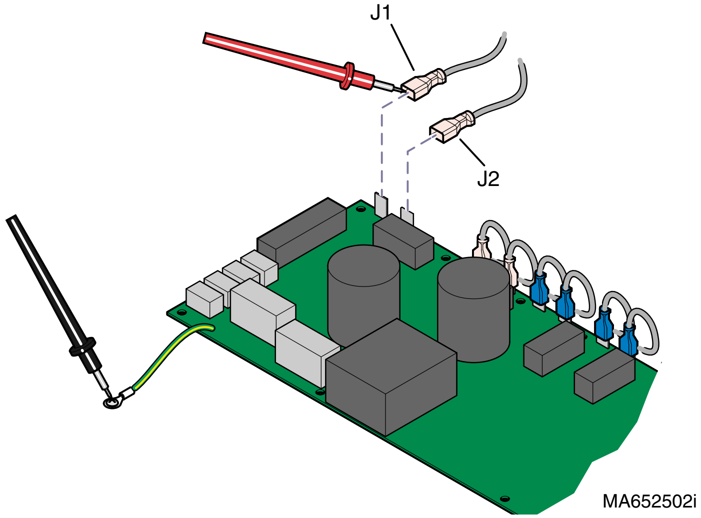
Meter Reading	***Status***	***Required Action***
1 to 10 Ω	👍	Actuator motor - OK. Perform ***Motor Ground Test***
OL *-or-* ***less than 1 Ω***	👎	Replace motor*.

**Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.*

Go To Page:

Refer To:
PC Board Test B-13
PC Board Cover Removal
models w/ Standard Base C-2
models w/Rotational Base C-3

Motor Ground Test



Motor Ground Test
Step 1: Place one meter probe on actuator wire (J1).
Place other meter probe on PC board ground wire.
Check meter reading. *(Repeat for J2)*

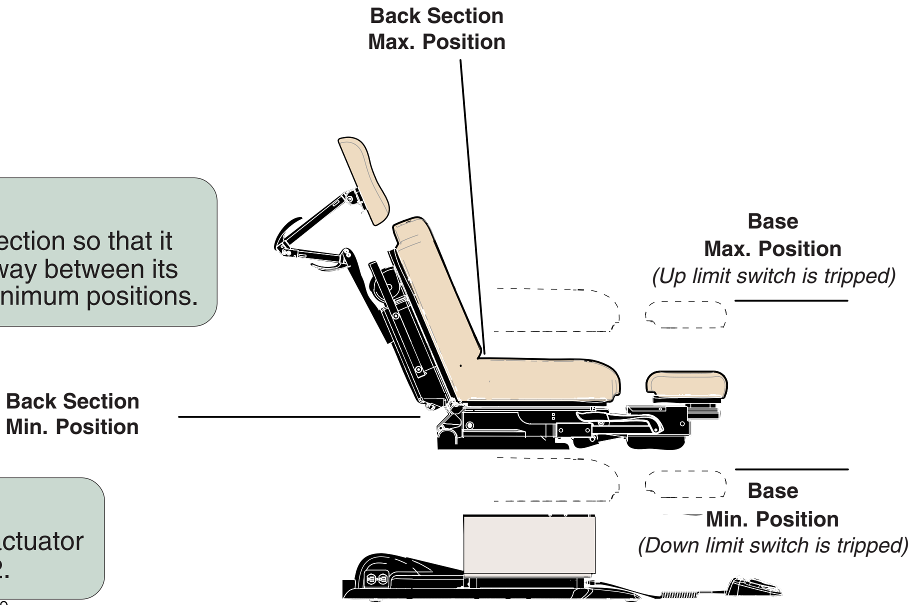
Meter Reading	***Status***	***Required Action***
OL *-or-* ***more than 1 MΩ***	👍	Motor harness - OK. Perform ***PC Board Test***
less than 1 Ω	👎	Replace motor*.

Base Actuator - continued

PC Board Test

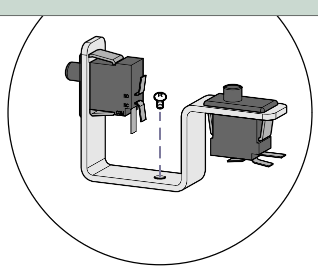
Refer To: **Go To Page:**
PC Board Replacement B-45
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3

PC Board Test
Step 1: Move **BACK** section so that it is approx. halfway between its maximum & minimum positions.

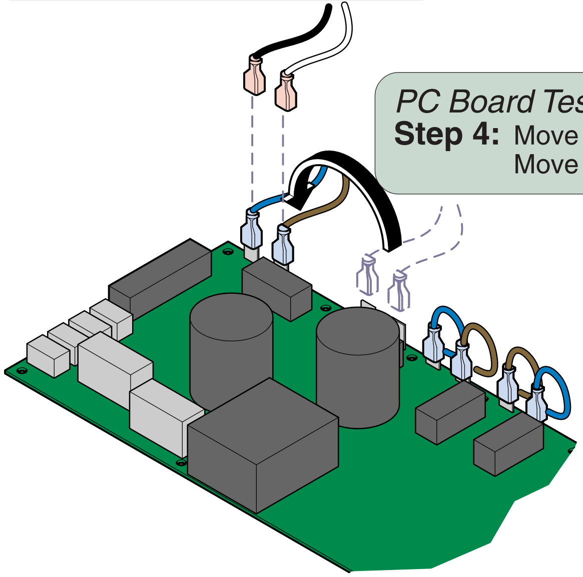

Back Section Max. Position
Base Max. Position
(Up limit switch is tripped)
Back Section Min. Position
Base Min. Position
(Down limit switch is tripped)

PC Board Test
Step 2: This test **cannot** be performed if either base limit switch is tripped.

If necessary, remove switch bracket.
*(Switch wires **must** remain connected)*



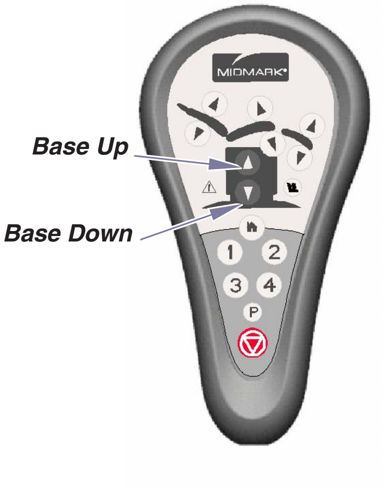
PC Board Test
Step 3: Disconnect base actuator wires from J1 & J2.



MA655400i

PC Board Test
Step 4: Move blue wire from J3 to J1.
Move brown wire from J4 to J2.

Equipment Alert
The back limit switches will not stop movement during this test.
Do not run past max. / min. positions.


Base Up
Base Down
MIDMARK
1
2
3
4
P

PC Board Test
Step 5: Press & hold Base Up button *(on the hand or foot control)* for 5 seconds.

*Does **back section** move up briefly, then stop & "beep"?*
If **YES**, go to Step 6.
If **NO**, replace PC Board.

PC Board Test
Step 6: Press & hold Base Down button *(on the hand or foot control)* for 5 seconds.

*Does **back section** move down briefly, then stop & "beep"?*
If **YES**, PC Board is OK.
If **NO**, replace PC Board.

Models: ***ALL***
Serial Numbers:

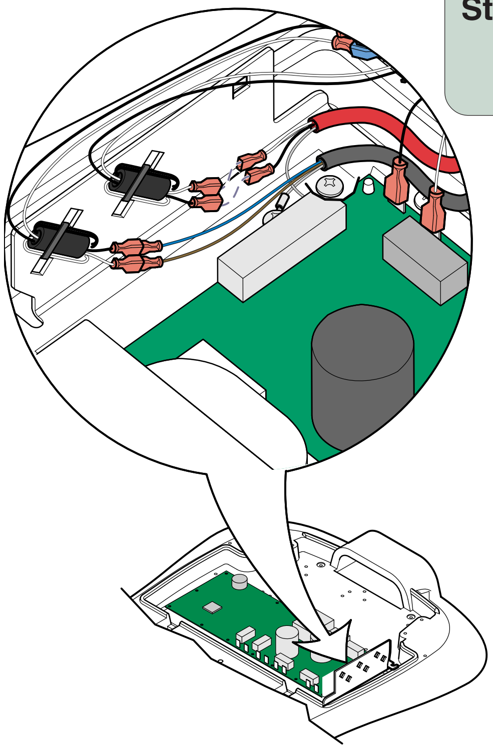
Back
Go To Table Of Contents
Next

Base Actuator - *continued*

Motor / Motor Coupler Replacement

Refer To: **Go To Page:**
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5

Removal
Step 1: Raise base as high as possible.

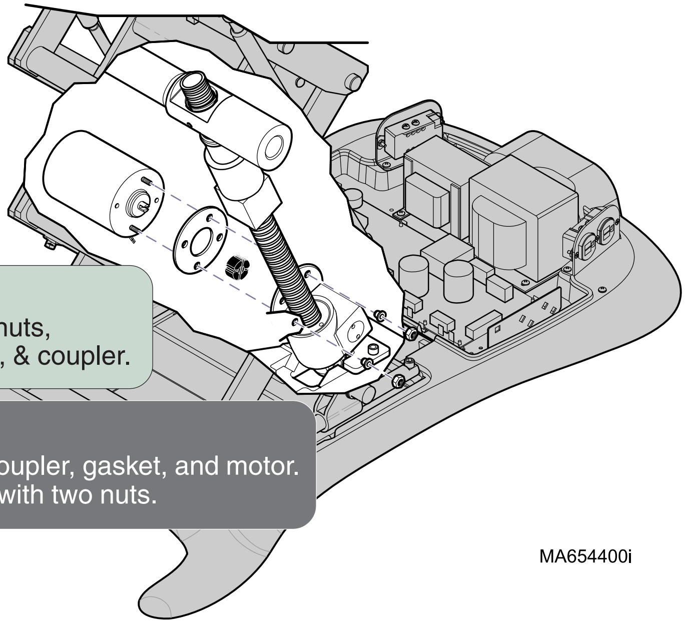


Removal
Step 2: Disconnect base actuator wires from choke harness.
Disconnect ground wire.

Note: *Remove cable ties & wire clamps as necessary.*

Installation
Step 2: Connect actuator wires to choke harness.
[white to white] [black to black]
Connect ground wire.

Note: *Replace all cable ties & wire clamps.*



Removal
Step 3: Remove two nuts,
motor, gasket, & coupler.

Installation
Step 1: Install coupler, gasket, and motor.
Secure with two nuts.

Models: ***ALL***
Serial Numbers:

Base Actuator - continued

Refer To: **Go To Page:**

PC Board Cover Removal:

models w/ Standard Base C-2

models w/Rotational Base C-3

Base Shrouds:

Raising (w/bungee cord) C-4

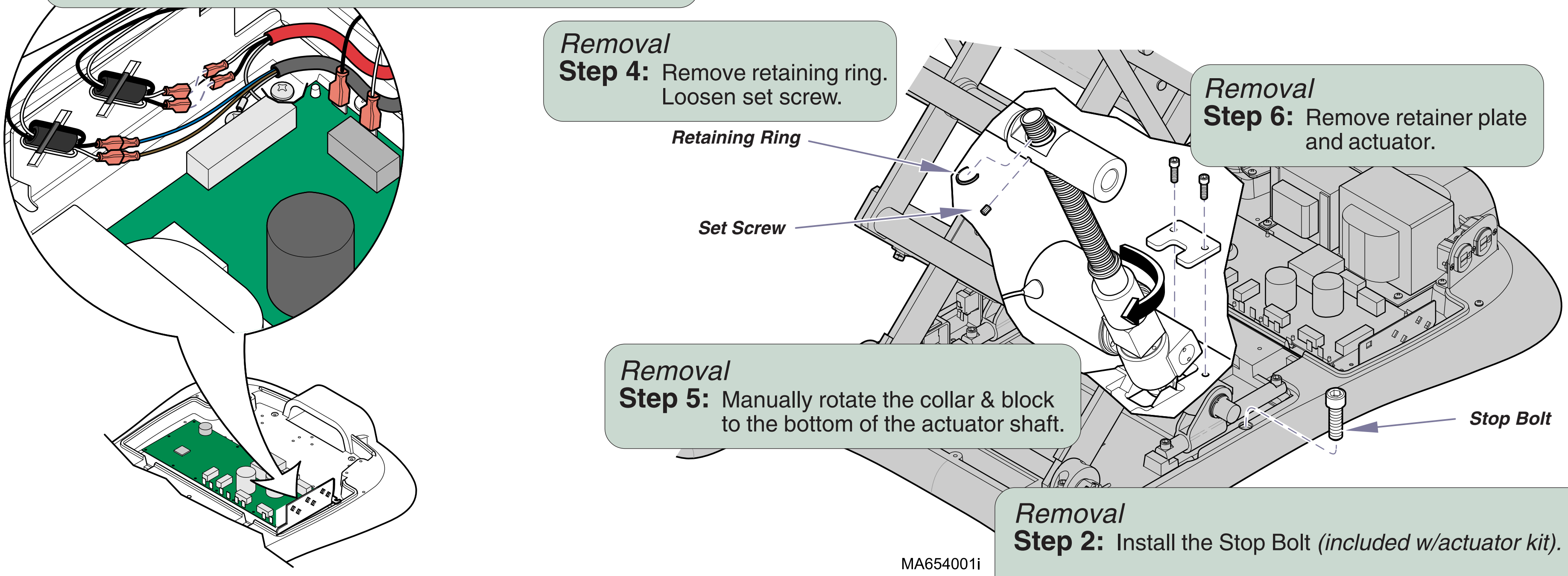
Removal C-5

Actuator Removal

Removal
Step 1: Run Base Up function to maximum height.

Removal
Step 3: Disconnect base actuator wires from choke harness.
Disconnect ground wire.

Note: *Remove cable ties & wire clamps as necessary.*



Removal
Step 4: Remove retaining ring.
Loosen set screw.

Removal
Step 6: Remove retainer plate and actuator.

Removal
Step 5: Manually rotate the collar & block to the bottom of the actuator shaft.

Removal
Step 2: Install the Stop Bolt *(included w/actuator kit).*

⚠ ***Caution***
*The gas springs **may** support the full weight of the table, but the stop bolt is still required to ensure safety.*

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Go To Table Of Contents
Next

Base Actuator - continued

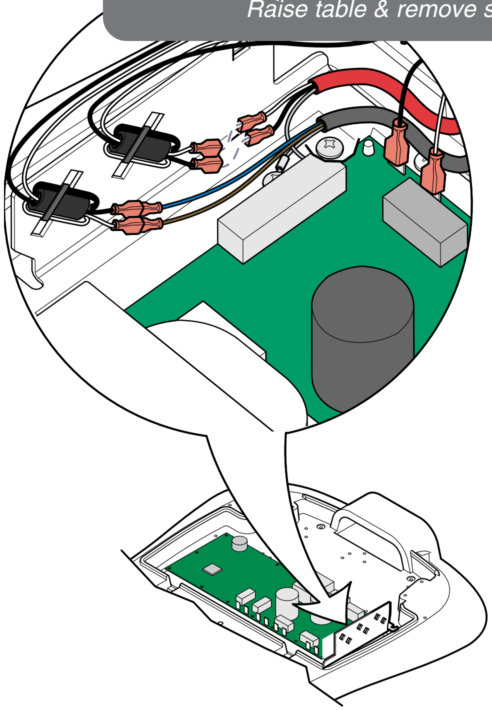
Actuator Installation

Refer To: **Go To Page:**

PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5

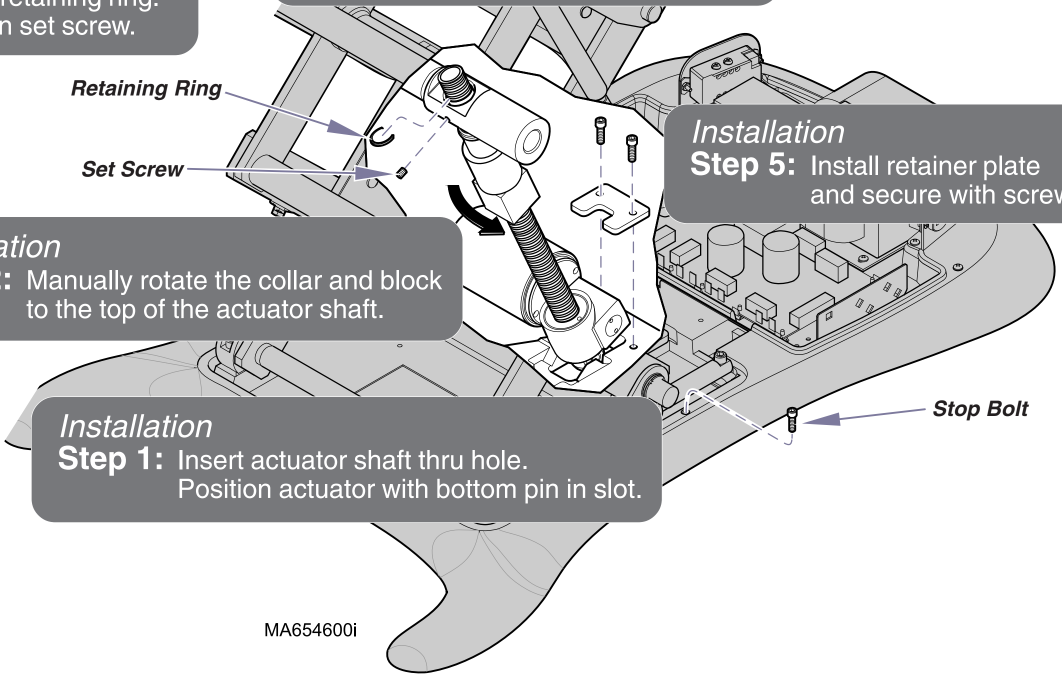
Installation
Step 6: Connect actuator wires to choke harness.
[white to white] [black to black]
Connect ground wire.

Note: *Replace all cable ties & wire clamps.*
Raise table & remove stop bolt.



Installation
Step 4: Install retaining ring.
Tighten set screw.

Installation
Step 3: Push table top down, until top of collar sticks thru cross bar.



Installation
Step 5: Install retainer plate and secure with screws.

Installation
Step 2: Manually rotate the collar and block to the top of the actuator shaft.

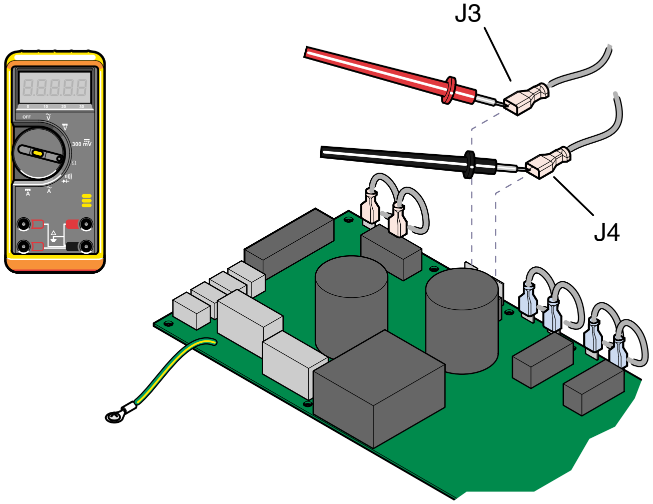
Installation
Step 1: Insert actuator shaft thru hole.
Position actuator with bottom pin in slot.

Back Actuator

[NOTE: The Back Actuator has no serviceable components. If the actuator malfunctions, it must be replaced.]

Actuator Motor Test

Actuator Motor Test
Step 1: Tag / disconnect back actuator wires *(J3 & J4)*.

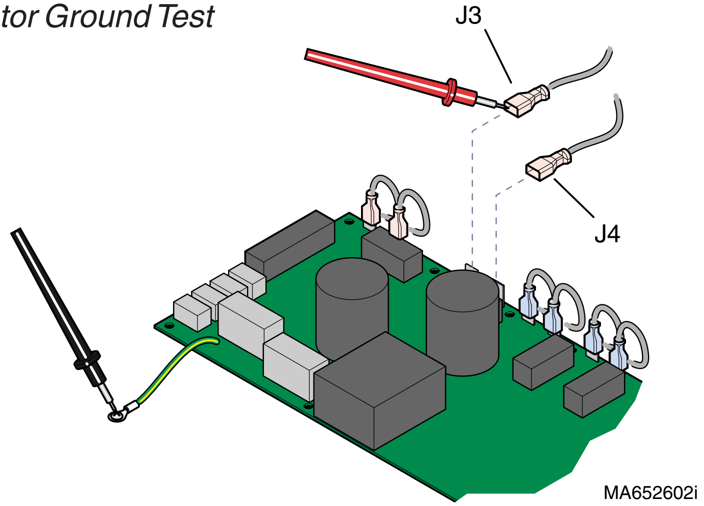


Actuator Motor Test
Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading	***Status***	***Required Action***
1 to 10 Ω	👍	Actuator motor - OK. Perform ***Motor Ground Test***
OL *-or-* ***less than 1 Ω***	👎	Replace motor*.

Back Actuator **Page**
Actuator Motor Test B-17
PC Board Test B-18
Actuator Replacement B-19
Wiring Diagrams D-1
Exploded View / Part Numbers:
Midmark models E-11
Ritter models E-12

Motor Ground Test



Motor Ground Test
Step 1: Place one meter probe on actuator wire (J3). Place other meter probe on PC board ground wire. Check meter reading. *(Repeat for J4)*

Meter Reading	***Status***	***Required Action***
OL *-or-* ***more than 1 MΩ***	👍	Motor harness - OK. Perform ***PC Board Test***
less than 1 Ω	👎	Replace motor*.

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Go To Table Of Contents
Next

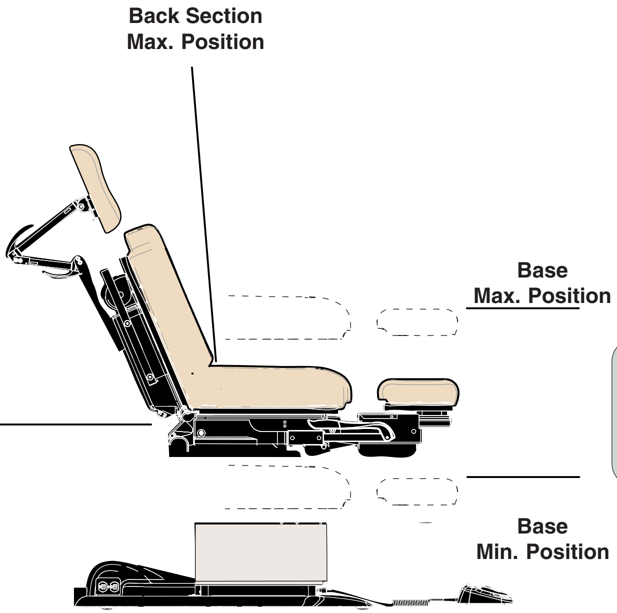
Component Testing & Repair

Back Actuator - continued

PC Board Test

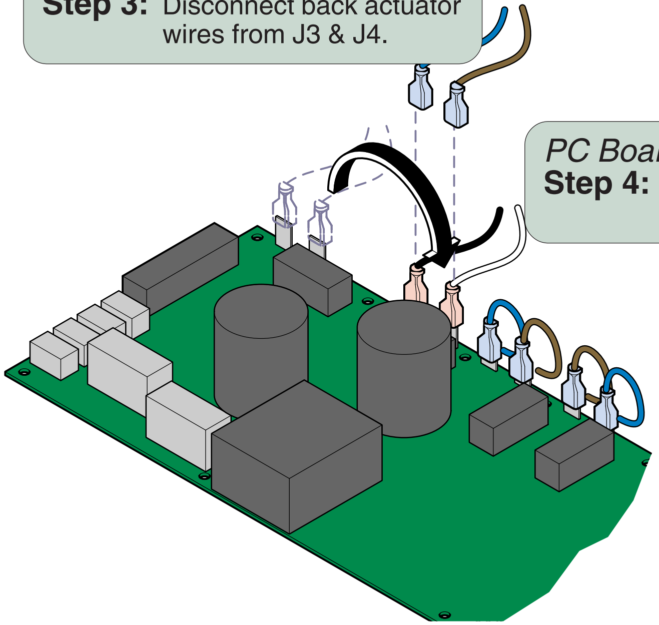
PC Board Test
Step 1: This test cannot be performed with the back section in the max. *or* min. position.

If necessary, reposition the back section. Refer to: *Base Actuator - PC Board Test*


Back Section Max. Position
Base Max. Position
Back Section Min. Position
Base Min. Position

PC Board Test
Step 2: Move the **BASE** function so that it is approx. halfway between the maximum & minimum positions.

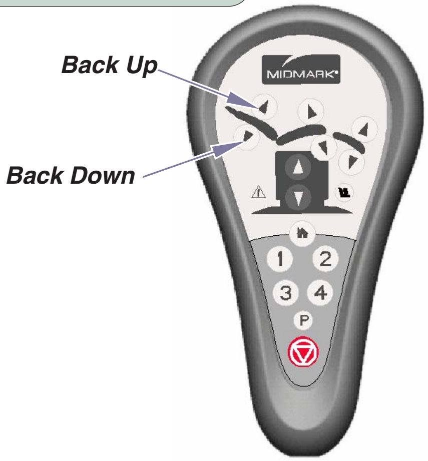
PC Board Test
Step 3: Disconnect back actuator wires from J3 & J4.



MA655500i

PC Board Test
Step 4: Move black wire from J1 to J3. Move white wire from J2 to J4.

Equipment Alert
The base limit switches will not stop movement during this test.
Do not run past max. / min. positions.


Back Up
Back Down
MIDMARK
1
2
3
4
P

PC Board Test
Step 5: Press & hold Back Up button for 5 seconds.

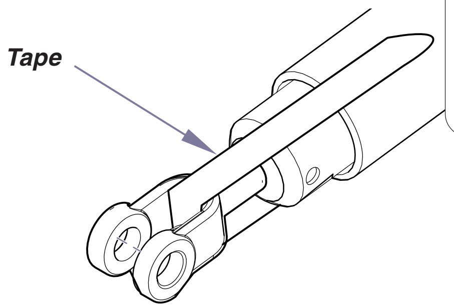
Does the ***base*** *move up, then stop & "beep"?*
If **YES**, go to Step 6.
If **NO**, replace PC Board.

PC Board Test
Step 6: Press & hold Back Down button for 5 seconds.

Does the ***base*** *move down, then stop & "beep"?*
If **YES**, PC Board is OK.
If **NO**, replace PC Board.

Back Actuator - continued

Actuator Replacement



Equipment Alert
Do not remove tape from new actuator, until instructed to do so.

Doing so will allow the actuator shaft & yoke to rotate resulting in misalignment of the internal limit switches

Refer To:

Go To Page:

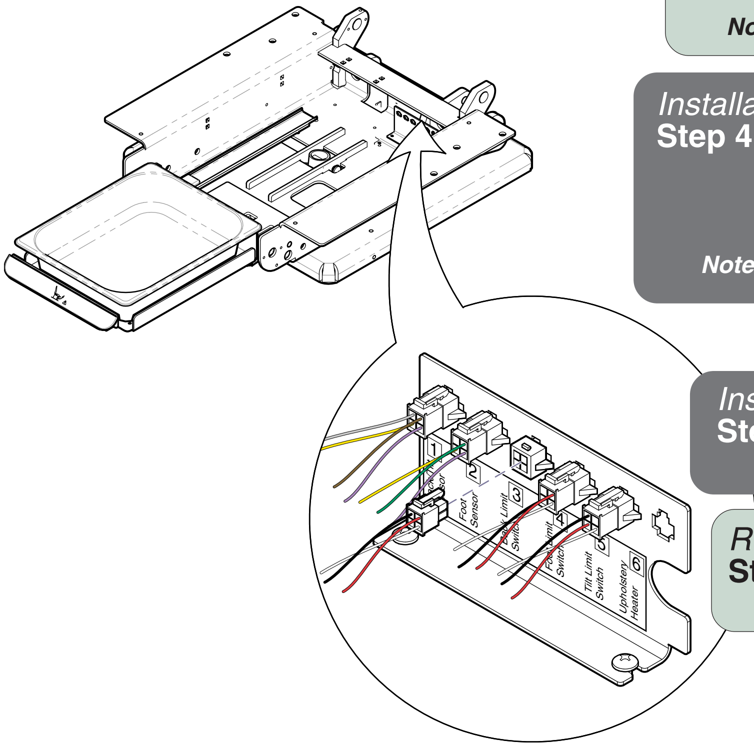
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5
Back Section Covers C-7
Seat Section Covers C-8

Removal
Step 1: Disconnect back actuator wires from choke harness.
Disconnect ground wire.
Pull actuator wire up thru table.

Note: *Remove cable ties & wire clamps as necessary.*

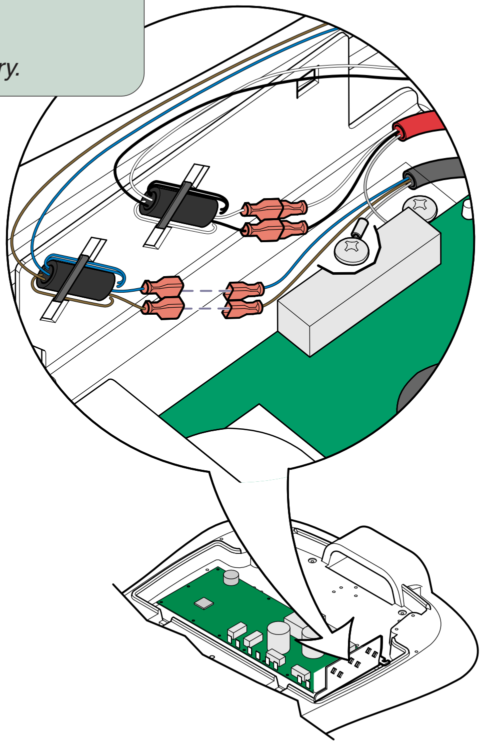
Installation
Step 4: Route actuator wire down thru table.
Connect actuator wires to choke harness.
[brown to brown] [blue to blue]
Connect ground wire.

Note: *Replace all cable ties & wire clamps.*



Installation
Step 3: Route back limit switch harness and connect to junction board.

Removal
Step 2: Disconnect back limit switch harness **[3]** from junction board.



Models: ALL
Serial Numbers:

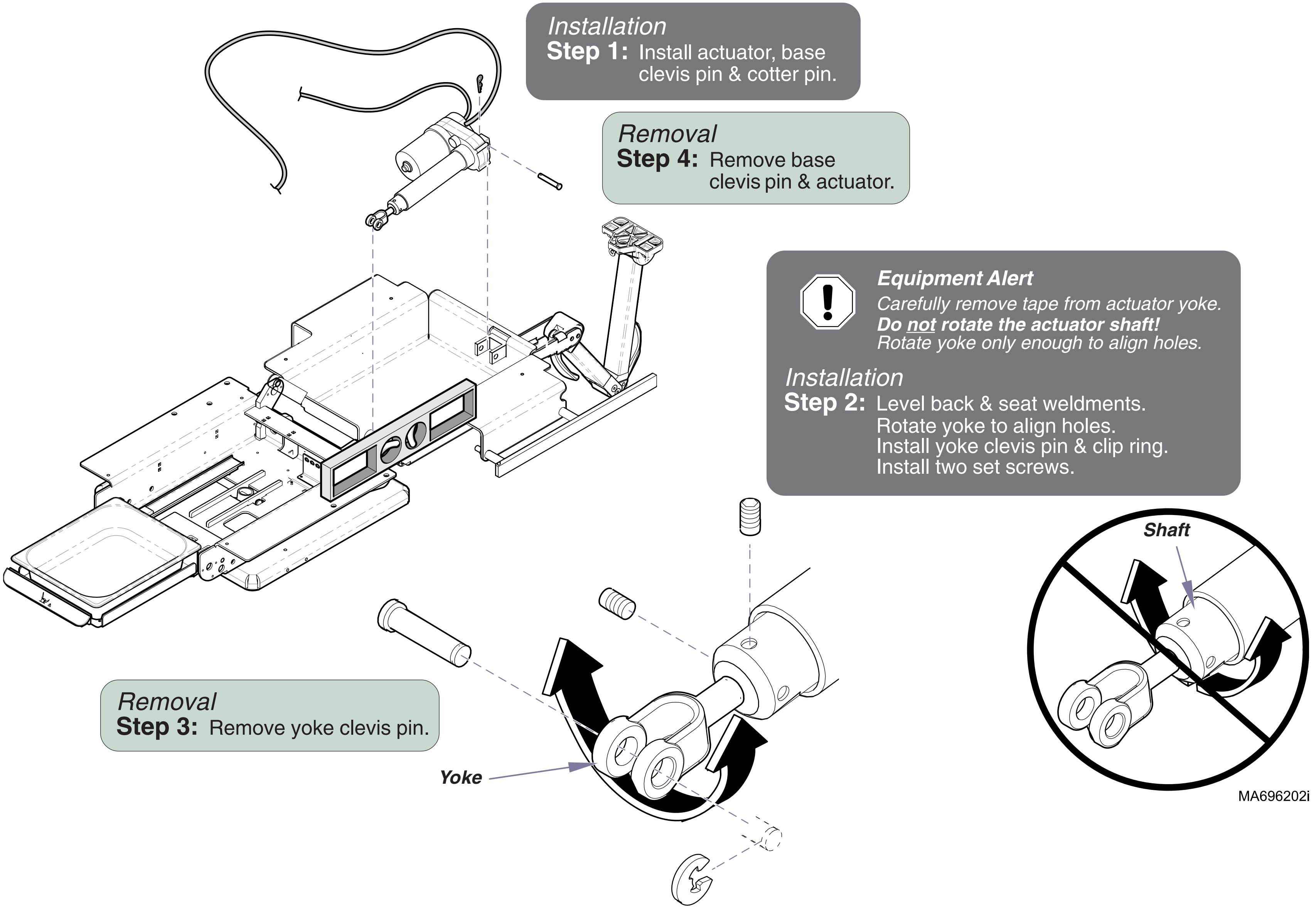
Back

Go To Table Of Contents

Next

Back Actuator - continued

Actuator Replacement - continued



Installation
Step 1: Install actuator, base clevis pin & cotter pin.

Removal
Step 4: Remove base clevis pin & actuator.

Equipment Alert
Carefully remove tape from actuator yoke.
Do not rotate the actuator shaft!
Rotate yoke only enough to align holes.

Installation
Step 2: Level back & seat weldments.
Rotate yoke to align holes.
Install yoke clevis pin & clip ring.
Install two set screws.

Removal
Step 3: Remove yoke clevis pin.

Models: ***ALL***
Serial Numbers:

Back

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Next

Tilt Actuator

[NOTE: The Tilt Actuator has no serviceable components. If the actuator malfunctions, it must be replaced.]

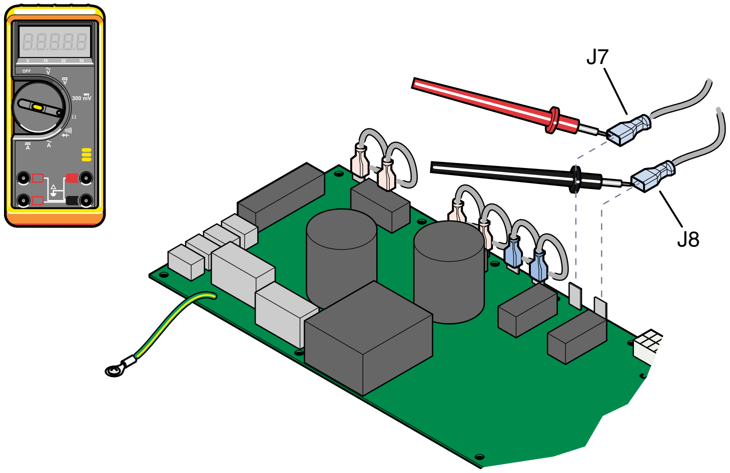
Go To Page:

Tilt Actuator

Actuator Motor Test B-21
PC Board Test B-22
Actuator Replacement B-23
Wiring Diagrams D-1
Exploded View / Part Numbers E-17

Actuator Motor Test

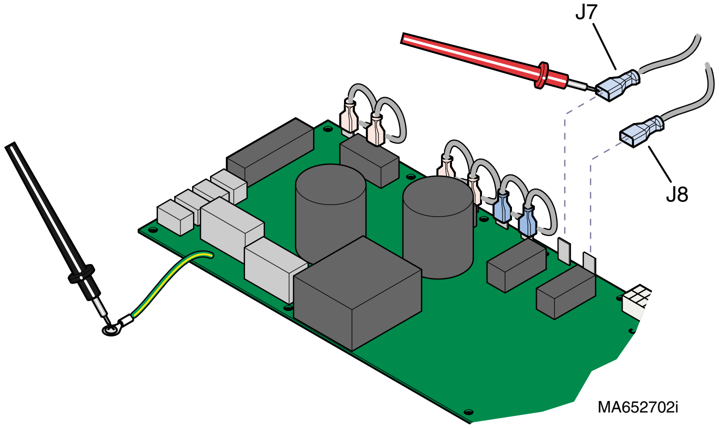
Actuator Motor Test
Step 1: Tag, then disconnect tilt actuator wires *(J7 & J8)*.



Actuator Motor Test
Step 2: Place meter probes on actuator wires.
Check meter reading.

Meter Reading	***Status***	***Required Action***
1 to 10 **Ω**	👍	Actuator motor - OK. Perform ***Motor Ground Test***
OL *-or-* ***less than 1*** **Ω**	👎	Replace motor*.

Motor Ground Test



Motor Ground Test
Step 1: Place one meter probe on actuator wire (J7).
Place other meter probe on PC board ground wire.
Check meter reading. *(Repeat for J8)*

Meter Reading	***Status***	***Required Action***
OL *-or-* ***more than 1*** **MΩ**	👍	Motor harness - OK. Perform ***PC Board Test***
less than 1 **Ω**	👎	Replace motor*.

Component Testing & Repair

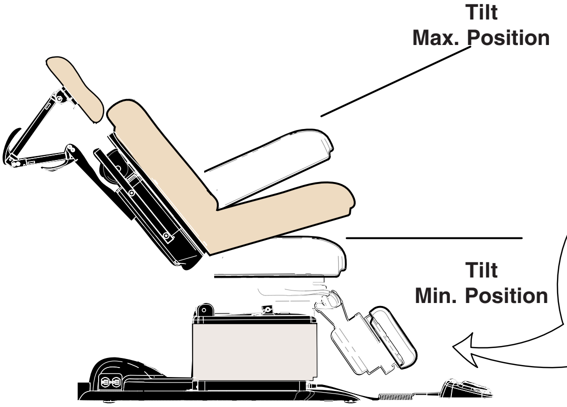
Tilt Actuator - continued

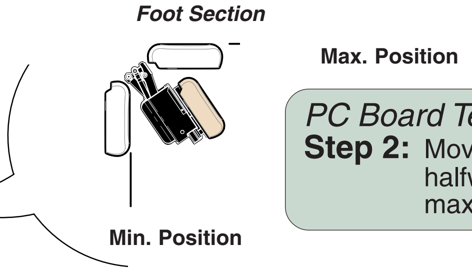
PC Board Test

PC Board Test
Step 1: This test cannot be performed with the tilt function in the max. *or* min. position.

If necessary, reposition the tilt function. Refer to: *Foot Actuator - PC Board Test*

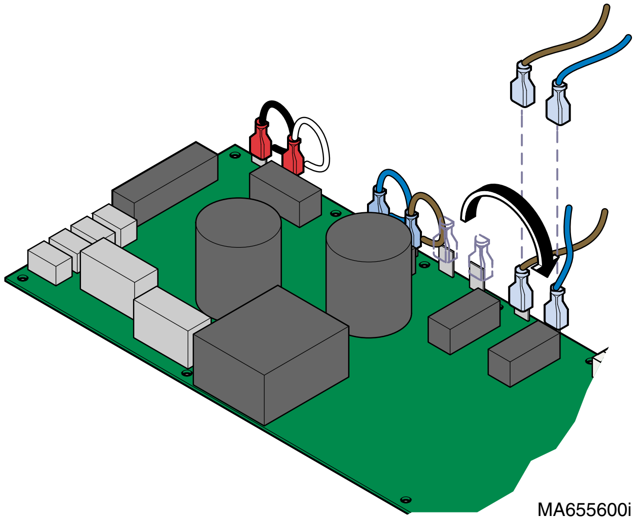
Refer To: **Go To Page:**
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5
Seat Section Covers C-8





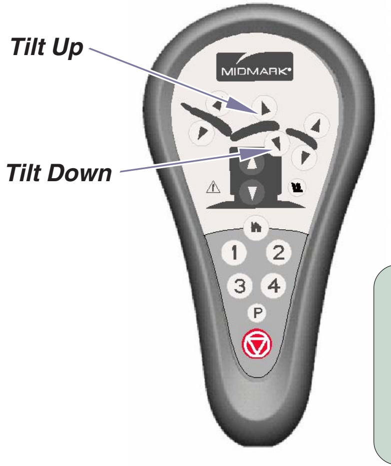
PC Board Test
Step 2: Move the **FOOT** section halfway between the max. & min. positions.

PC Board Test
Step 3: Disconnect tilt actuator wires from J7 & J8.



PC Board Test
Step 4: Move brown wire from J6 to J7.
Move blue wire from J5 to J8.

Equipment Alert
The foot limit switches will not stop movement during this test.
Do not run past max. / min. positions.



PC Board Test
Step 5: Press & hold Tilt Up button for 5 seconds.

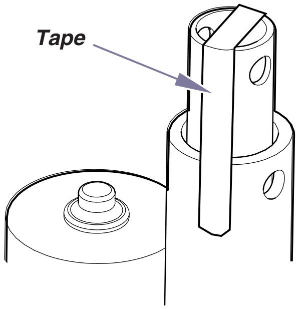
*Does the **foot section** move up, then stop & "beep"?*
If **YES**, go to Step 6.
If **NO**, replace PC Board.

PC Board Test
Step 6: Press & hold Tilt Down button for 5 seconds.

*Does the **foot section** move down, then stop & "beep"?*
If **YES**, PC Board is OK.
If **NO**, replace PC Board.

Tilt Actuator - *continued*

Actuator Replacement



Equipment Alert
Do not remove tape from new actuator, until instructed to do so.

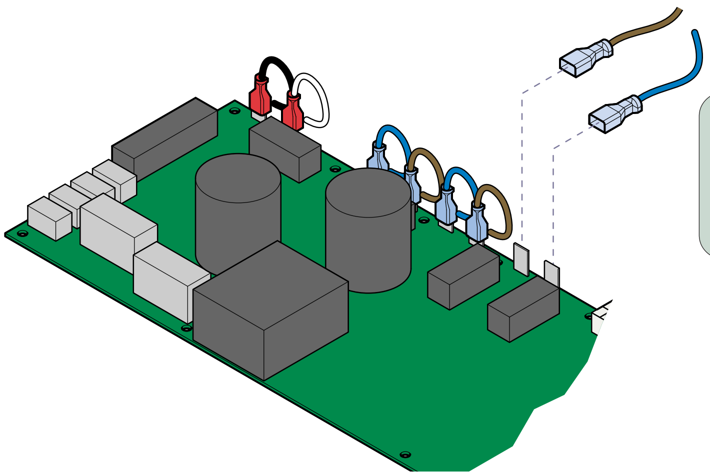
Doing so will allow the actuator shaft to rotate resulting in misalignment of the internal limit switches

Refer To: **Go To Page:**

PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5
Seat Section Covers C-8

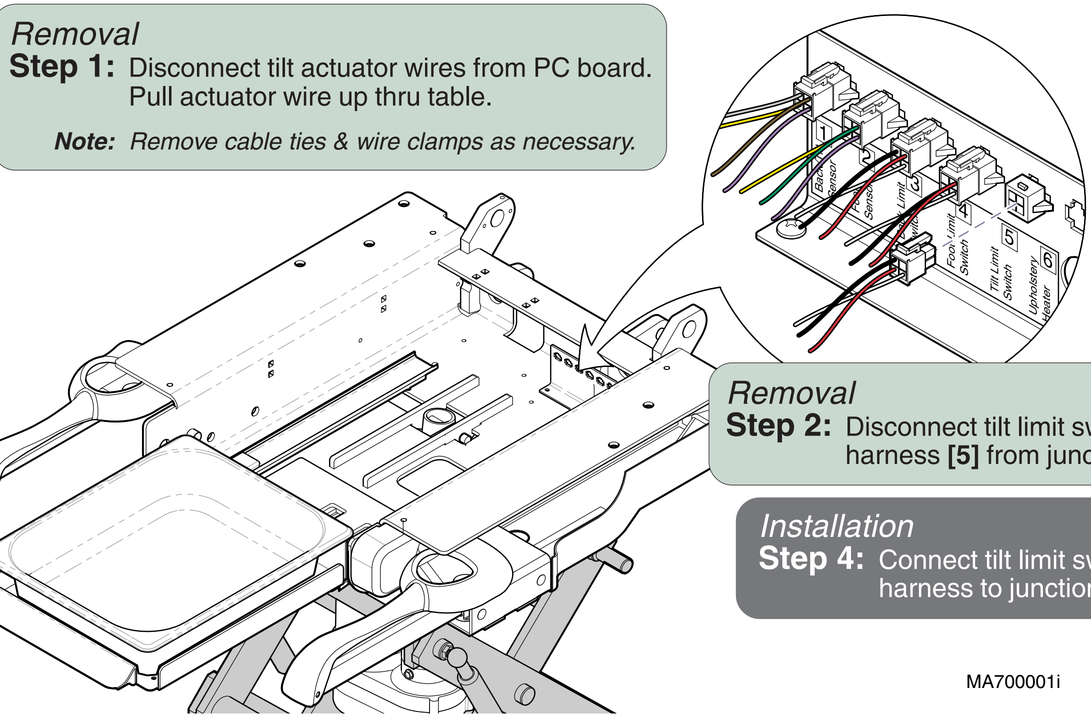
Installation
Step 5: Route actuator wire thru table. Connect actuator wires to PC board. *[brown - J7] [blue - J8]*

Note: *Replace all cable ties & wire clamps.*



Removal
Step 1: Disconnect tilt actuator wires from PC board. Pull actuator wire up thru table.

Note: *Remove cable ties & wire clamps as necessary.*



Removal
Step 2: Disconnect tilt limit switch harness **[5]** from junction board.

Installation
Step 4: Connect tilt limit switch wire harness to junction board.

MA700001i

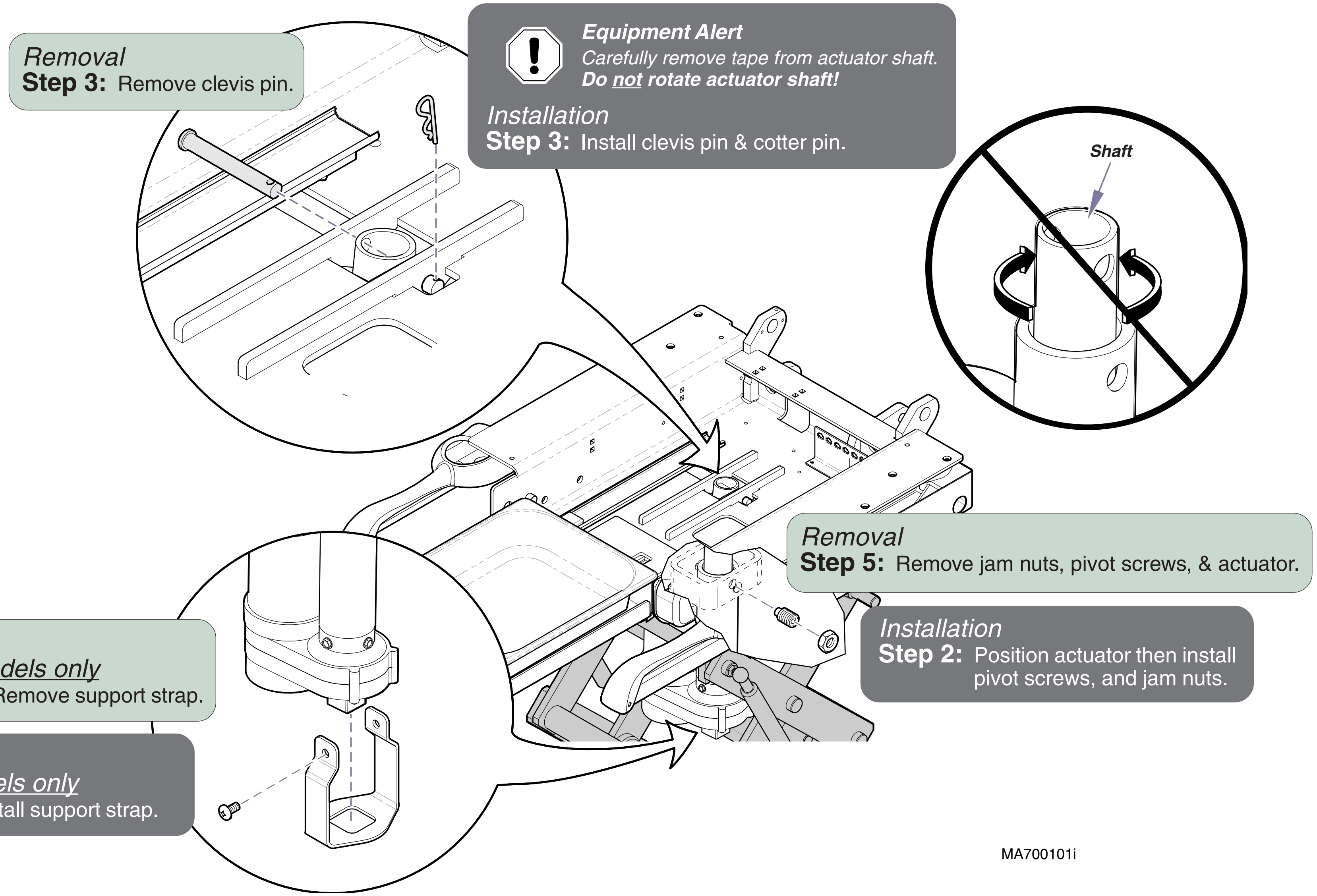
Models: ***ALL***
Serial Numbers:

SF-1838 Rev. 7/5/12

Component Testing & Repair

Tilt Actuator - continued

Actuator Replacement - continued



Removal
Step 3: Remove clevis pin.

Equipment Alert
Carefully remove tape from actuator shaft.
Do not rotate actuator shaft!

Installation
Step 3: Install clevis pin & cotter pin.

Removal
Step 5: Remove jam nuts, pivot screws, & actuator.

Installation
Step 2: Position actuator then install pivot screws, and jam nuts.

Removal
Ritter models only
Step 4: Remove support strap.

Installation
Ritter models only
Step 1: Install support strap.

Foot Actuator

[NOTE: The Foot Actuator has no serviceable components. If the actuator malfunctions, it must be replaced.]

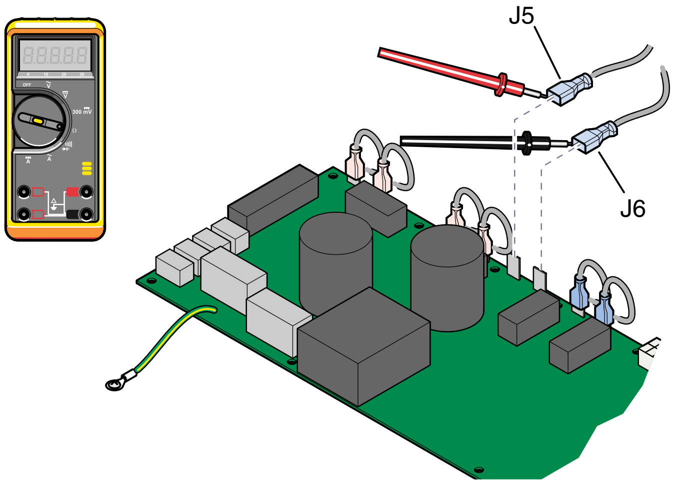
Foot Actuator

Go To Page:

Actuator Motor Test B-25
PC Board Test B-26
Actuator Replacement B-27
Wiring Diagrams D-1
Exploded View / Part Numbers:
Midmark models E-7
Ritter models E-8

Actuator Motor Test

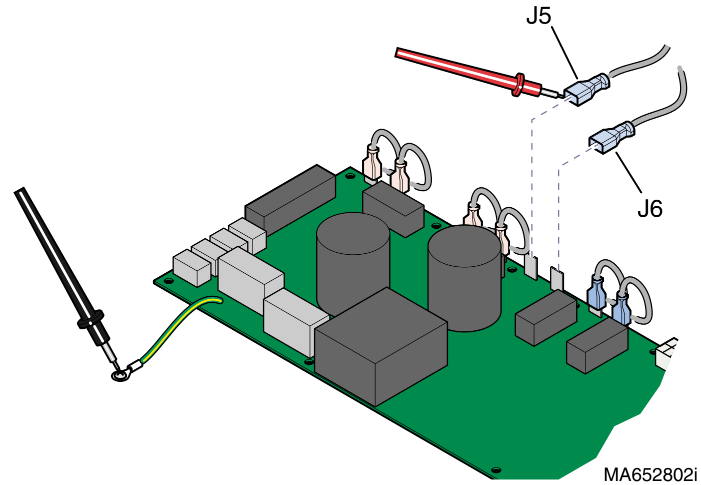
Actuator Motor Test
Step 1: Tag / disconnect foot actuator wires *(J5 & J6)*.



Actuator Motor Test
Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading	***Status***	***Required Action***
1 to 10 Ω	👍	Actuator motor - OK. Perform ***Motor Ground Test***
OL** -or-* ***less than 1 Ω	👎	Replace motor*.

Motor Ground Test



Motor Ground Test
Step 1: Place one meter probe on actuator wire (J5). Place other meter probe on PC board ground wire. Check meter reading. *(Repeat for J6)*

Meter Reading	***Status***	***Required Action***
OL** -or-* ***more than 1 MΩ	👍	Motor harness - OK. Perform ***PC Board Test***
less than 1 Ω	👎	Replace motor*.

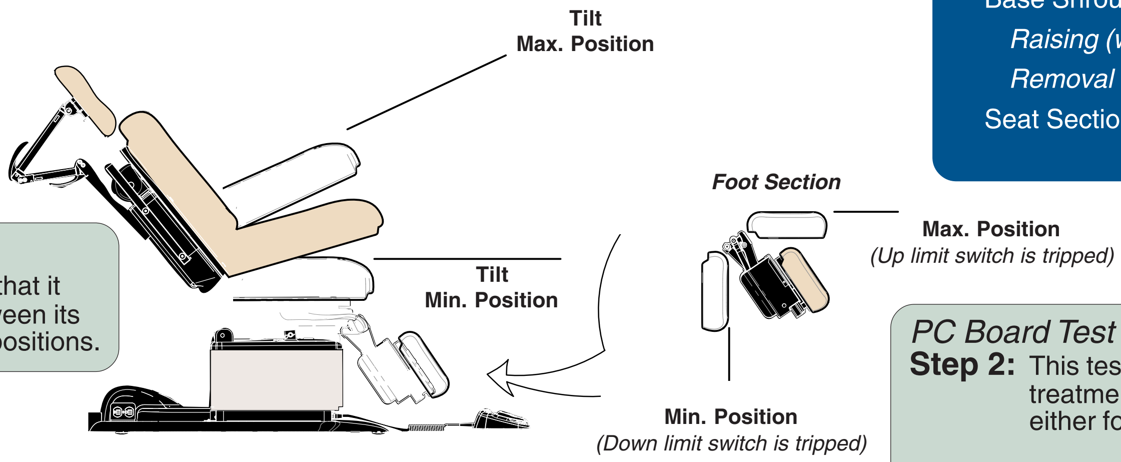
Foot Actuator - *continued*

PC Board Test

Refer To:

Go To Page:

PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5
Seat Section Covers C-8

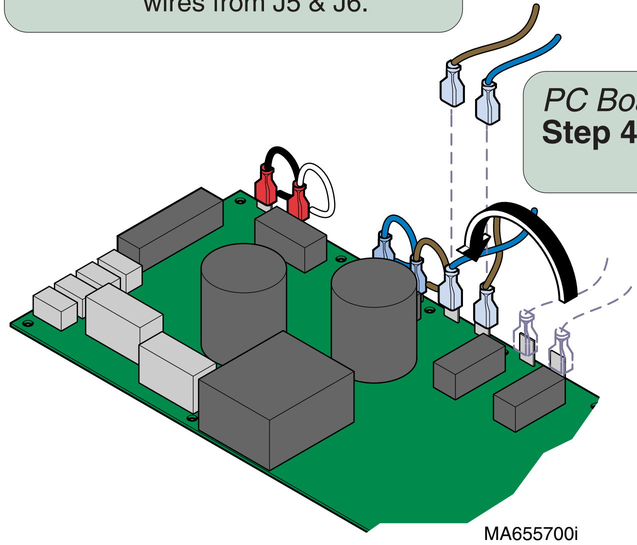

Tilt
Max. Position
Tilt
Min. Position
Foot Section
Max. Position
(Up limit switch is tripped)
Min. Position
(Down limit switch is tripped)

PC Board Test
Step 1: Move **TILT** function so that it is approx. halfway between its maximum & minimum positions.

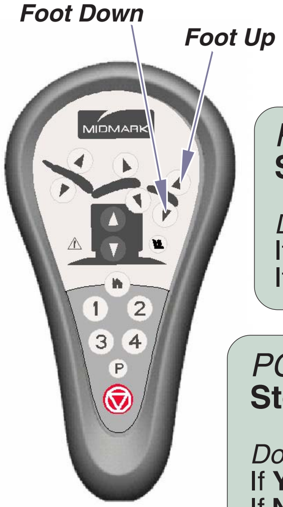
PC Board Test
Step 2: This test **cannot** be performed if treatment pan is pulled out, or if either foot limit switch is tripped.

If necessary, remove switch trigger bracket. Refer to: *Foot Section Covers* in Section C

PC Board Test
Step 3: Disconnect foot actuator wires from J5 & J6.



PC Board Test
Step 4: Move brown wire from J7 to J6. Move blue wire from J8 to J5.


Foot Down
Foot Up
MIDMARK
1
2
3
4
P

Equipment Alert
The tilt limit switches will not stop movement during this test.
Do not run past max. / min. positions.

PC Board Test
Step 5: Press & hold Foot Up button for 5 seconds.

Does the ***tilt function*** *move up, then stop & "beep"?*
If **YES**, go to Step 6.
If **NO**, replace PC Board.

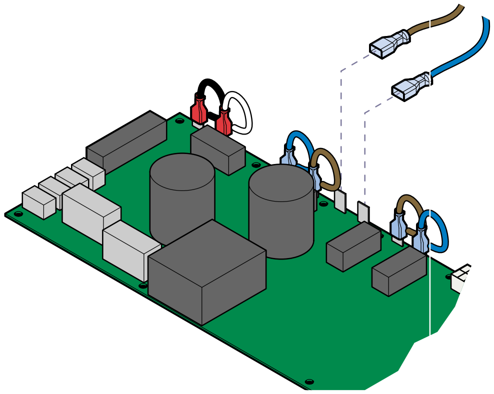
PC Board Test
Step 6: Press & hold Foot Down button for 5 seconds.

Does the ***tilt function*** *move down, then stop & "beep"?*
If **YES**, PC Board is OK.
If **NO**, replace PC Board.

***Foot Actuator** - continued*

Actuator Replacement

NOTE: *Midmark table is shown. The procedure for Ritter tables is similar.*



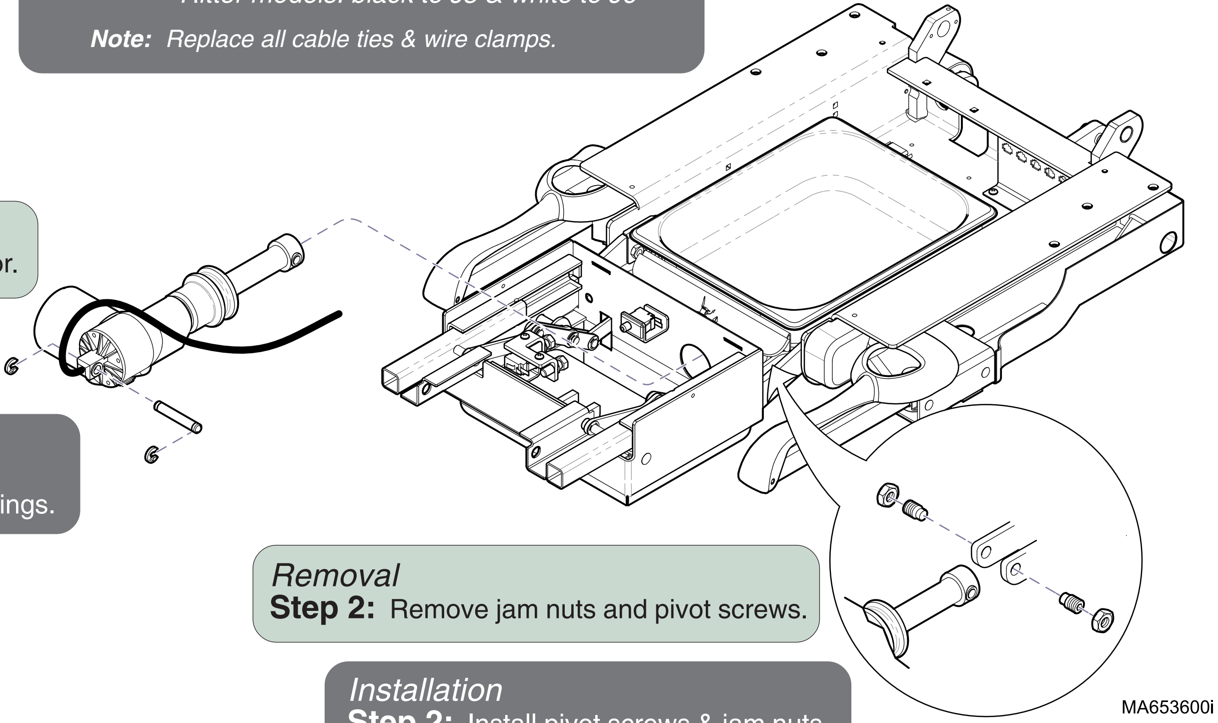
Removal
Step 1: Disconnect foot actuator wires from PC board. Pull actuator wire up thru table.

Note: *Remove cable ties & wire clamps as necessary.*

Installation
Step 3: Route actuator wire thru table.
Connect actuator wires to PC board.
Midmark models: blue to J5 & brown to J6
Ritter models: black to J5 & white to J6

Note: *Replace all cable ties & wire clamps.*

Refer To: **Go To Page:**
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Base Shrouds:
Raising (w/bungee cord) C-4
Removal C-5
Seat Section Covers C-8
Foot Section Covers:
Midmark models C-7
Ritter models C-8



Removal
Step 3 : Remove clevis pin and actuator.

Installation
Step 1: Position actuator and install clevis pin & e-rings.

Removal
Step 2: Remove jam nuts and pivot screws.

Installation
Step 2: Install pivot screws & jam nuts.

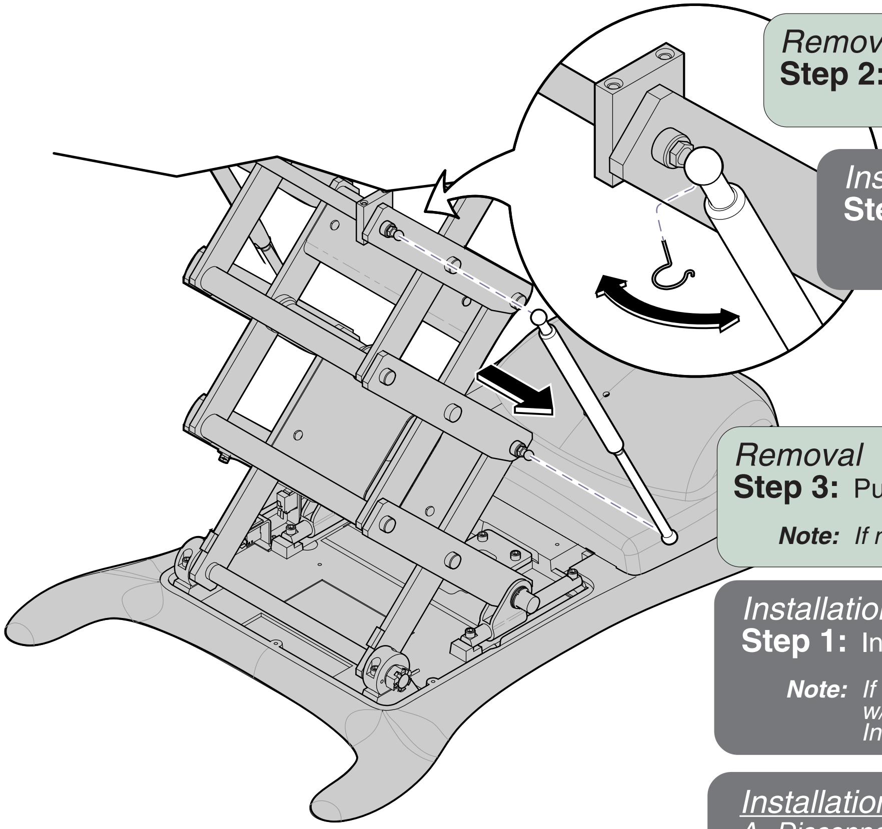
Component Testing & Repair

Gas Springs

Replacement

Go To Page:
Gas Springs
Replacement B-28
Base Shroud *(Removal / Installation)* ... C-5
Wiring Diagrams D-1
Exploded View / Part Numbers E-18

Removal
Step 1: Run base function all the way up.



Removal
Step 2: Remove ball clips from top and bottom of gas spring.

Installation
Step 2: Secure spring with ball clips.

Note: *Be sure clip passes thru both holes in spring.*

Removal
Step 3: Pull gas spring off of mounting balls.

Note: *If necessary, use a screwdriver to pry.*

Installation
Step 1: Install gas spring *(cylinder up).*

Note: *If gas spring will not align w/mounting balls, refer to Installation Tip below.*

Installation Tip
A. Disconnect & remove Base Up Limit Switch
B. Reconnect wires to limit switch
C. Raise base to align gas spring
D. Lower base, install / reconnect limit switch

Isolation Transformer / Table Receptacles

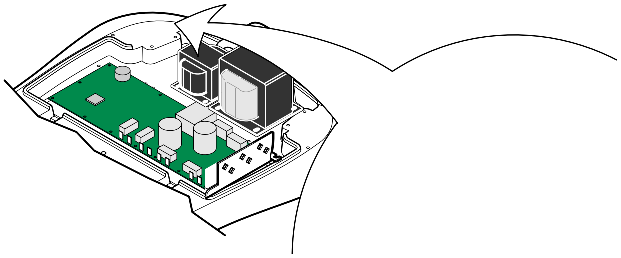
[NOTE: This transformer affects table receptacles only].

Output Voltage Test

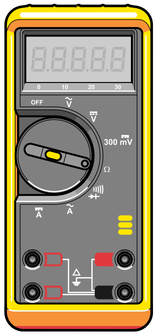
[Isolation Transformer](#)

Go To Page:

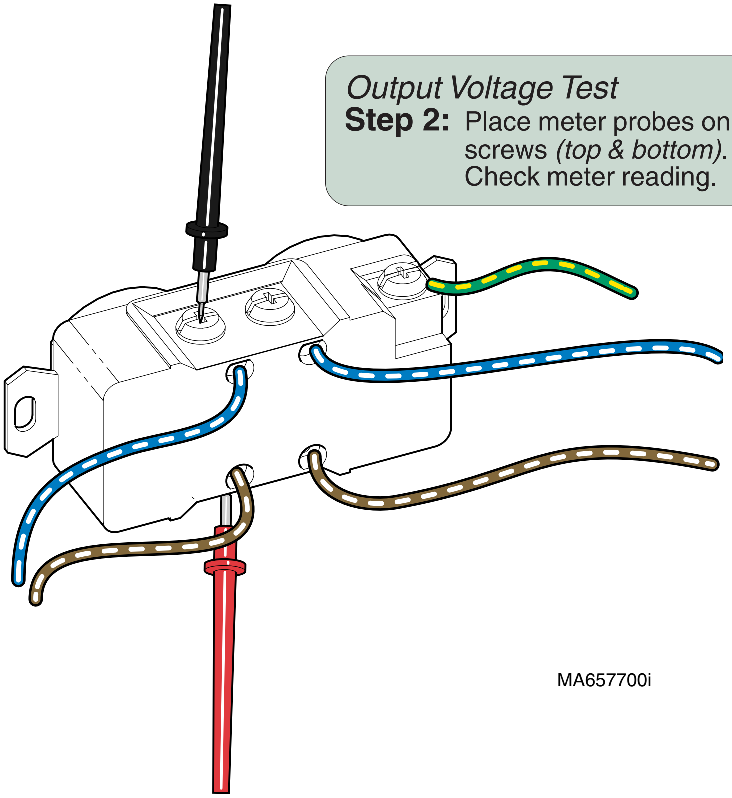
Output Voltage Test B-29
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Wiring Diagrams D-1
Exploded View / Part Numbers E-26



Output Voltage Test
Step 1: Set meter to **200 VAC.**



Output Voltage Test
Step 2: Place meter probes on receptacle screws *(top & bottom)*. Check meter reading.



MA657700i

Meter Reading	*Status*	*Required Action*
120 (±12) VAC	👍	Transformer - OK Replace receptacle(s).
less than 108 VAC	👎	If table power light is ON, replace transformer. If not, check supply voltage.

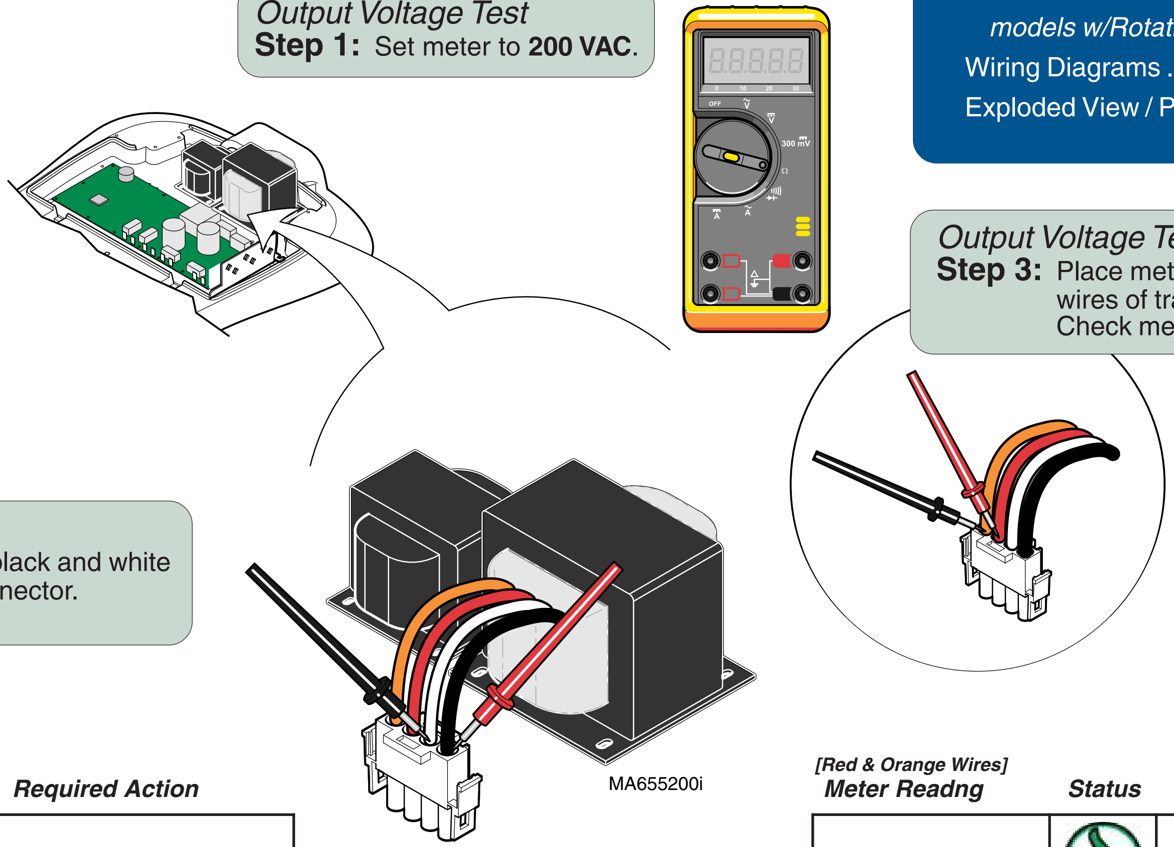
Main System Transformer

[NOTE: This transformer affects all table functions (except table receptacles)].

Output Voltage Test

Go To Page:

Main System Transformer
Output Voltage Test B-30
Resistance Test B-31
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Wiring Diagrams D-1
Exploded View / Part Numbers E-23



Output Voltage Test
Step 1: Set meter to **200 VAC**.

Output Voltage Test
Step 2: Place meter probes on black and white wires of transformer connector. Check meter reading.

Output Voltage Test
Step 3: Place meter probes on red and orange wires of transformer connector. Check meter reading.

[Black & White Wires]

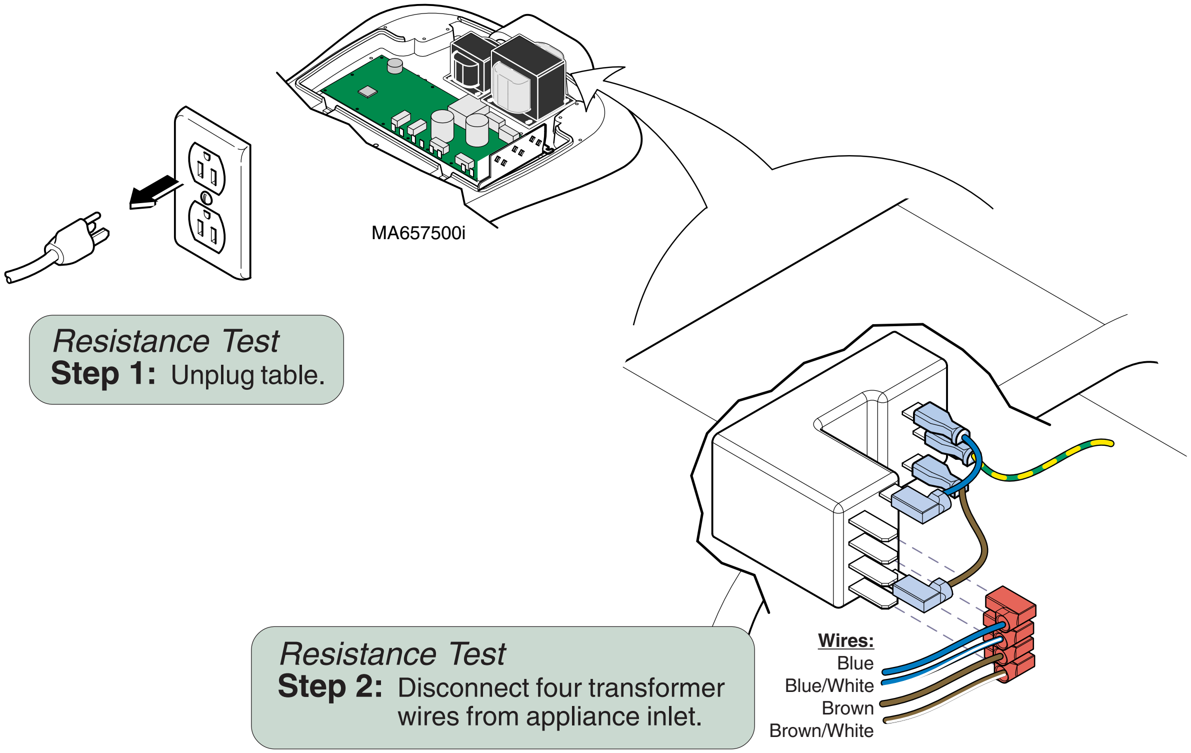
Meter Readng	***Status***	***Required Action***
42 to 58 VAC	👍	Transformer - OK
less than 42 VAC *more than 58 VAC*	👎	Perform ***Resistance Test***

[Red & Orange Wires]

Meter Readng	***Status***	***Required Action***
23 to 43 VAC	👍	Transformer - OK
less than 23 VAC	👎	Perform ***Resistance Test***

Main System Transformer - continued

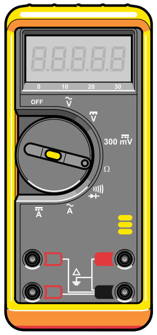
Resistance Test


MA657500i
Wires:
Blue
Blue/White
Brown
Brown/White

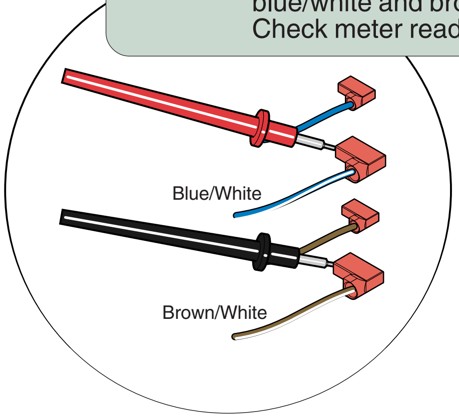
Resistance Test
Step 1: Unplug table.

Resistance Test
Step 2: Disconnect four transformer wires from appliance inlet.

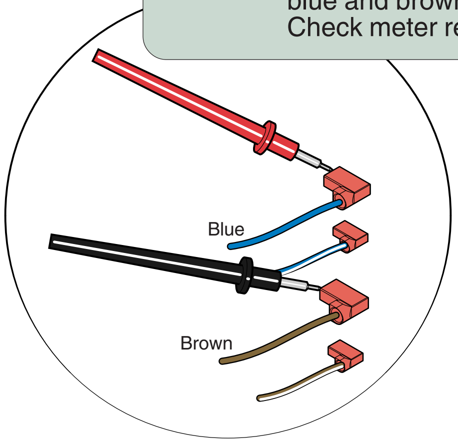
Resistance Test
Step 3: Set meter to **200 Ω.**


8.8.8.8.8
OFF
300 mV
Ω

Resistance Test
Step 4: Place meter probes on blue/white and brown/white wires. Check meter reading.


Blue/White
Brown/White

Resistance Test
Step 5: Place meter probes on blue and brown wires. Check meter reading.



Meter Readng	*Status*	*Required Action*
less than 10 **Ω**	👍	Transformer - OK
OL *-or-* *more than 10* **Ω**	👎	Replace transformer.

Position Sensors

Go To Page:
Position Sensors
Testing B-32
Location B-32
Output Voltage Test *(at Sensor)* B-33
Removal B-37
Adjustment B-38
Access Procedures C-1
Wiring Diagrams D-1
Exploded View / Part Numbers E-25

Testing

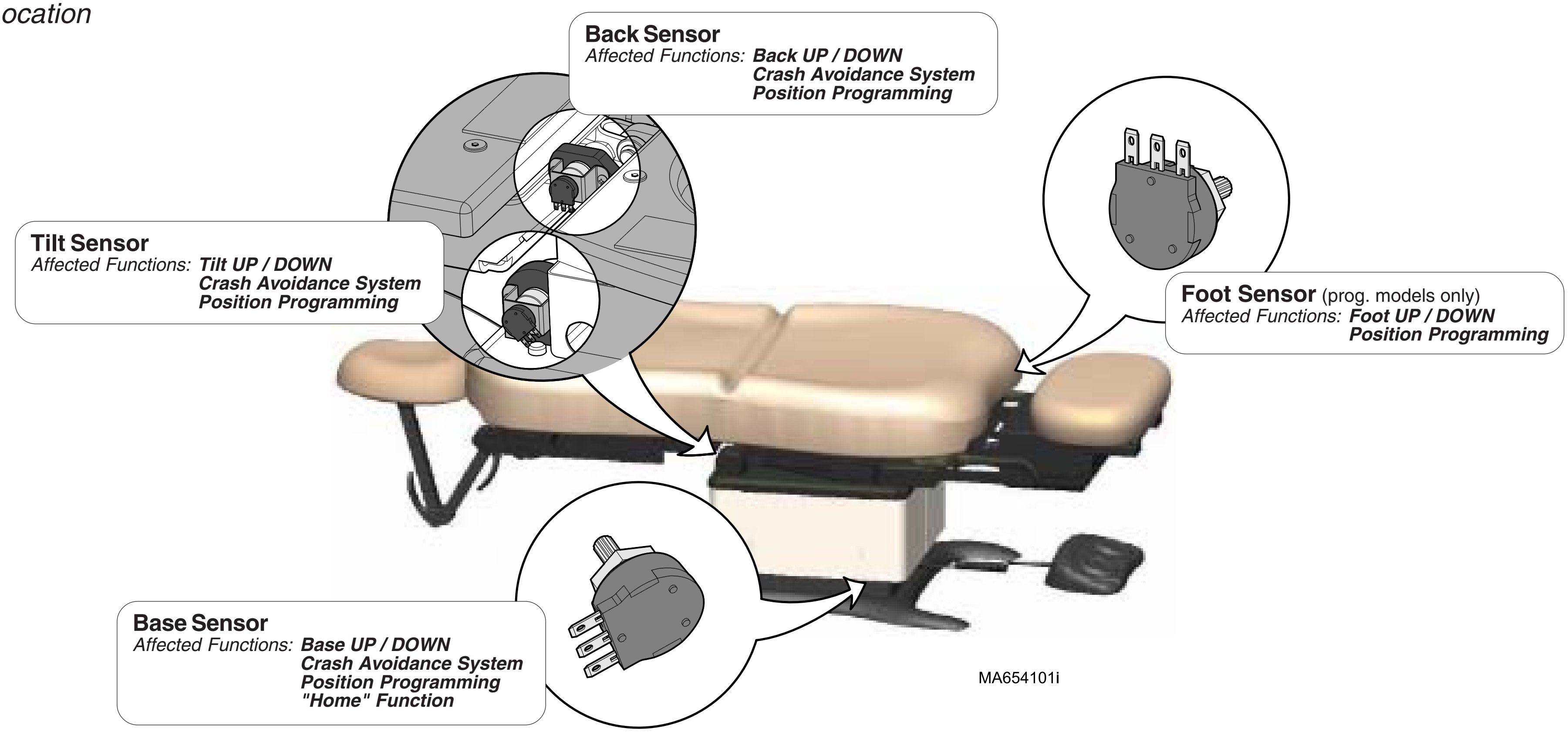
Step 1: Verify position sensor shoulder bolts are tight *(50 ft-lbs).*

Note: *This step does not apply to the Base position sensor.*

Step 2: Perform ***Output Voltage Test (at Sensor).***

Note: *This test must always be performed first.*
The results from this test determine the next required action.

Location



Back Sensor
Affected Functions: ***Back UP / DOWN***
Crash Avoidance System
Position Programming

Tilt Sensor
Affected Functions: ***Tilt UP / DOWN***
Crash Avoidance System
Position Programming

Foot Sensor (prog. models only)
Affected Functions: ***Foot UP / DOWN***
Position Programming

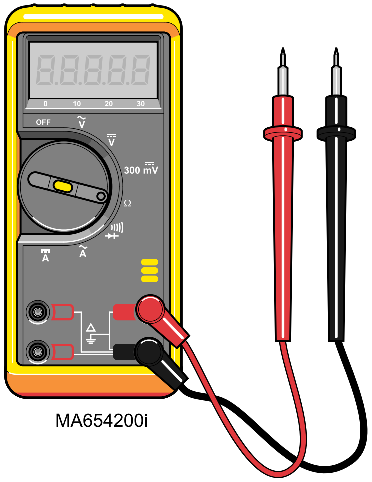
Base Sensor
Affected Functions: ***Base UP / DOWN***
Crash Avoidance System
Position Programming
"Home" Function

Position Sensors - continued

Output Voltage Test (at Sensor)

Go To Page:
Go to:
Output Voltage Test *(at PC Board)* B-34
Supply Voltage Test *(at Sensor)* B-35

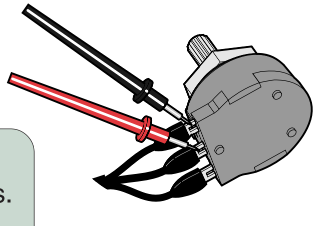
Output Voltage Test
Step 1: Set meter to **20 VDC.**



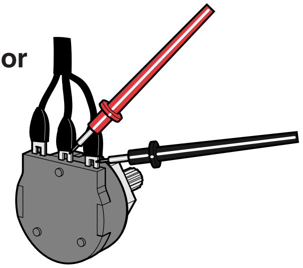
MA654200i

Output Voltage Test
Step 2: Place meter probes on proper terminals.
(See appropriate illustration)

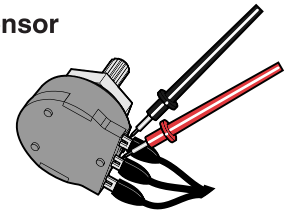
Base Sensor



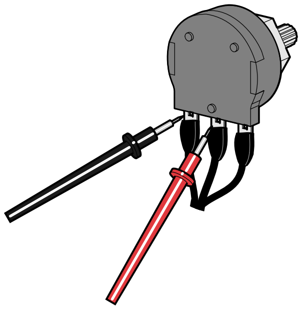
Foot Sensor

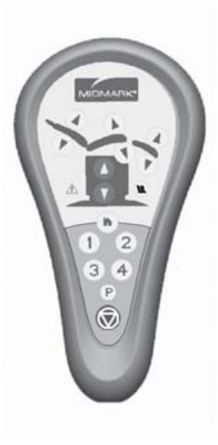


Tilt Sensor



Back Sensor





Output Voltage Test
Step 3: Run desired function up & down.
Watch meter reading as function moves.

Note: *Each sensor has a different voltage range.*

Meter Readng	*Position Sensor Status*	*Required Action*
Voltage steadily increases / decreases as function moves up / down	👍	Perform ***Output Voltage Test*** ***(at PC Board)***
Voltage does not change, or changes erratically as function moves up / down	⚠	Perform ***Supply Voltage Test*** ***(at Sensor)***

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	All	All

Back
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Next

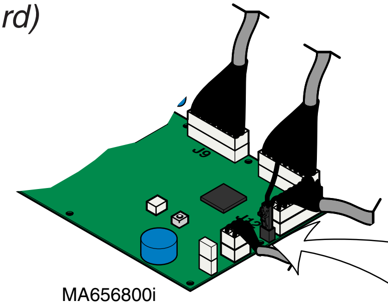
Component Testing & Repair

Position Sensors - *continued*

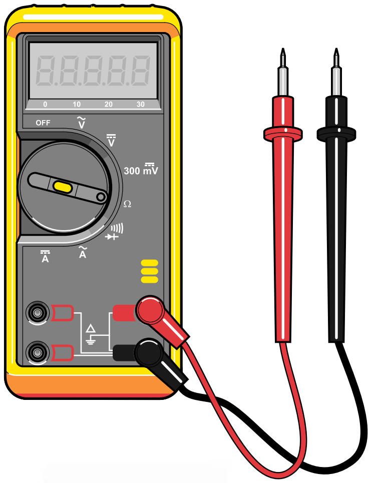
Output Voltage Test (at PC Board)

Go to: **Go To Page:**
PC Board Replacement B-44

Output Voltage Test
Step 1: Set meter to **20 VDC .**



MA656800i

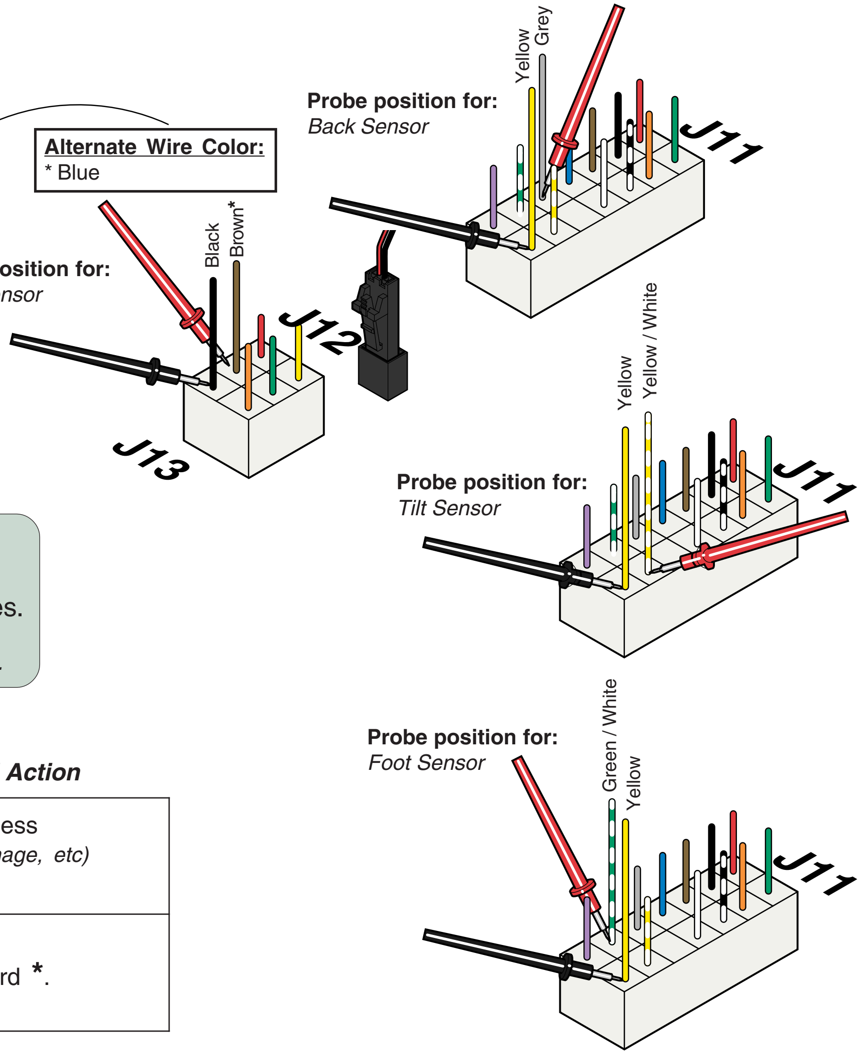

8.8.8.8.8
0
10
20
30
OFF
300 mV
Ω

MIDMARK
1
2
3
4
P

Output Voltage Test
Step 2: Place meter probes on proper wires.
(See appropriate illustration)

Output Voltage Test
Step 3: Run desired function up & down.
Watch meter reading as function moves.

Note: *Each sensor has a different voltage range.*


Yellow
Grey
J11
Black
Brown*
J12
J13
Yellow
Yellow / White
J11
Green / White
Yellow
J11

Probe position for:
Back Sensor

Alternate Wire Color:
* Blue

Probe position for:
Base Sensor

Probe position for:
Tilt Sensor

Probe position for:
Foot Sensor

Meter Readng	*PC Board Status*	*Required Action*
Voltage does not change, or changes erratically as function moves up / down	👍	Check wire harness *(connections, damage, etc)*
Voltage steadily increases / decreases as function moves up / down	👎	Replace PC Board *.

* ***Before replacing PC board,*** *be sure shoulder bolt at the position sensor pivot point is tight (and jam nut is in place). If bolt is loose, tighten it, then recalibrate PC board & check for proper operation.*

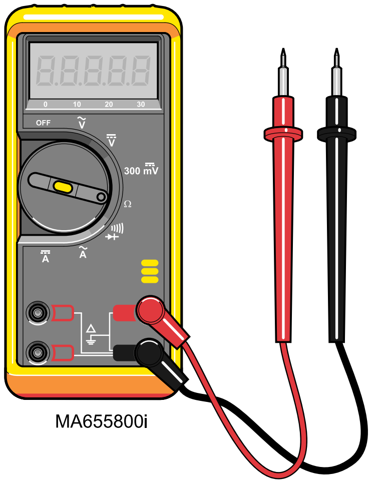
Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	All	All

Position Sensors - continued

Supply Voltage Test (at Sensor)

Go to: Go To Page:
Supply Voltage Test *(at PC Board)* B-36

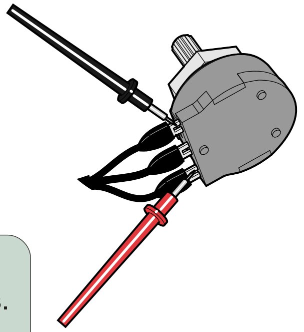
Supply Voltage Test
Step 1: Set meter to **20 VDC.**



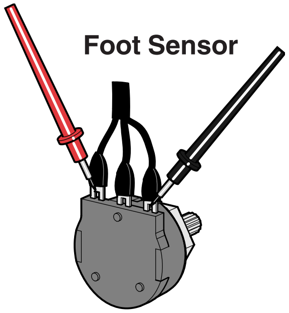
MA655800i

Supply Voltage Test
Step 2: Place meter probes on proper terminals.
(See appropriate illustration)

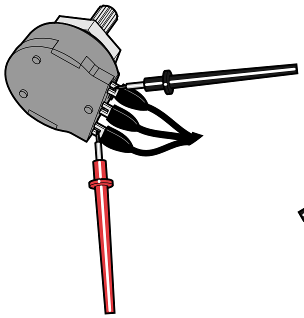
Base Sensor



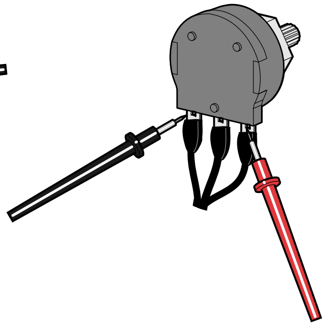
Foot Sensor



Tilt Sensor



Back Sensor



Meter Readng	***Position Sensor Status***	***Required Action***
2 to 4 VDC	👍	1. ***Position Sensor Adjustment*** 2. Replace position sensor*.
less than 2 VDC ***more than 4 VDC***	👎	Perform ***Supply Voltage Test (at PC Board)***
Reading changes erratically as BASE moves up / down	👎	Perform ***Supply Voltage Test (at PC Board)***

Back

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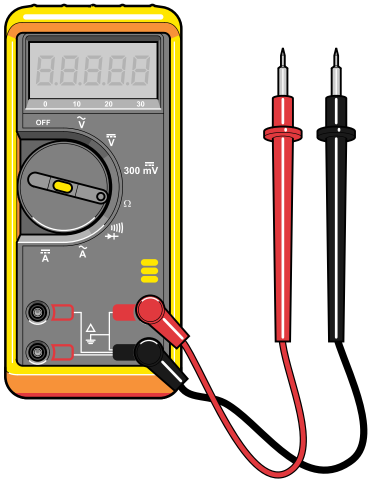
Next

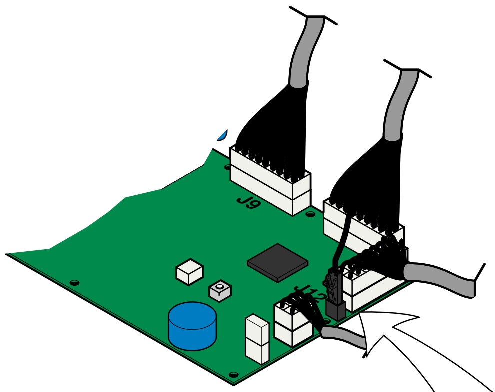
Position Sensors - *continued*

Supply Voltage Test (at PC Board)

Go to: **Go To Page:**
PC Board Replacement B-44

Supply Voltage Test
Step 1: Set meter to **20 VDC .**





MA654700i

Supply Voltage Test
Step 2: Place meter probes on proper wires.
(See appropriate illustration)

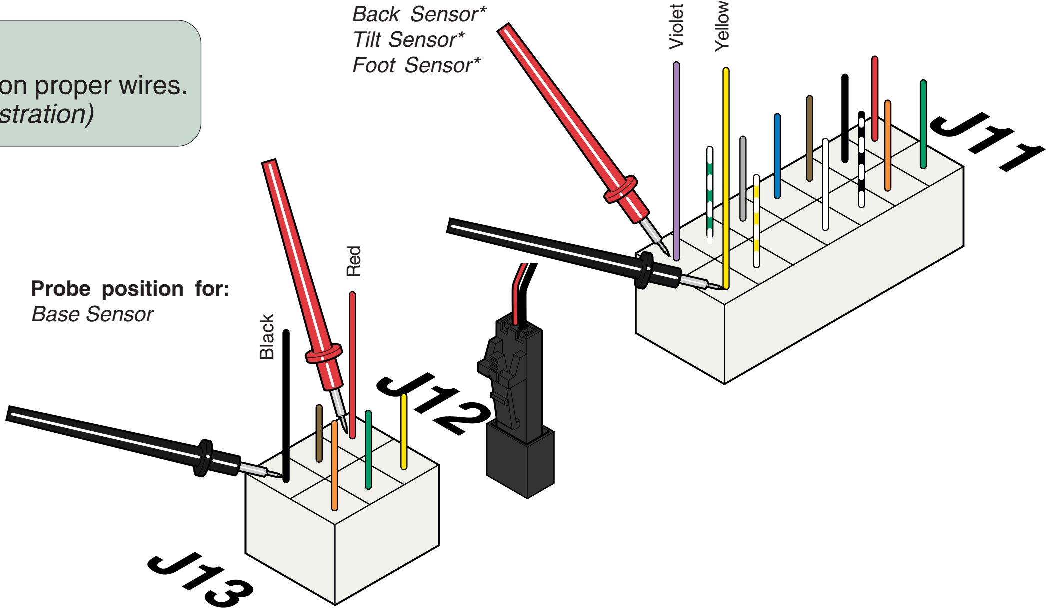
*** Attention** *(Back / Tilt / Foot only)*
If initial reading is less than 2VDC or more than 4VDC, unplug J11 connector & check meter reading at pins on PC board (same location).

If reading is:

2 to 4 VDC	Replace sensor wire harness.
< 2 VDC	Replace PC board.
> 4 VDC	Replace PC board

Probe position for:
*Back Sensor**
*Tilt Sensor**
*Foot Sensor**

Probe position for:
Base Sensor



Meter Reading	*PC Board Status*	*Required Action*
2 to 4 VDC	👍	Replace wire harness between: *(sensor & junction board) - or* *(junction board & PC board)*
less than 2 VDC *more than 4 VDC*	👎	Replace PC board*.

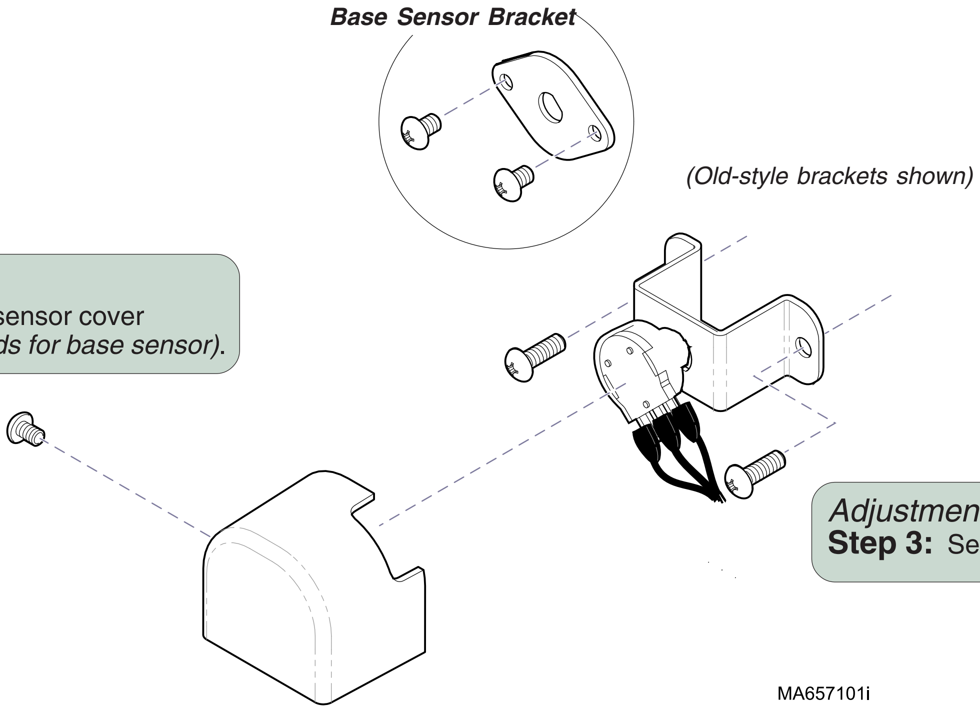
Position Sensors - *continued*

Adjustment

NOTE: *Complete replacement instructions are supplied with the sensor kit. They are also available on Midmark.com, or by clicking on the blue link.*

Adjustment
Step 1: Move the corresponding function as indicated below:
BASE / BACK / FOOT: *all the way UP*
TILT: *all the way DOWN*

Example: *If changing back sensor, press Back Up button until back section is all the way up.*



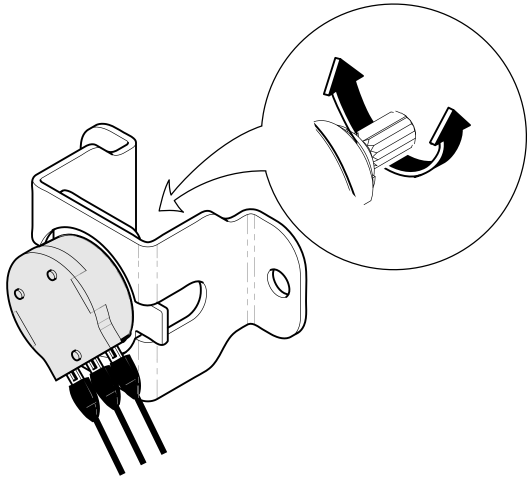
Adjustment
Step 2: Remove sensor cover *(or shrouds for base sensor).*

Adjustment
Step 3: Separate bracket / sensor from chair.

Component Testing & Repair

Position Sensors - continued

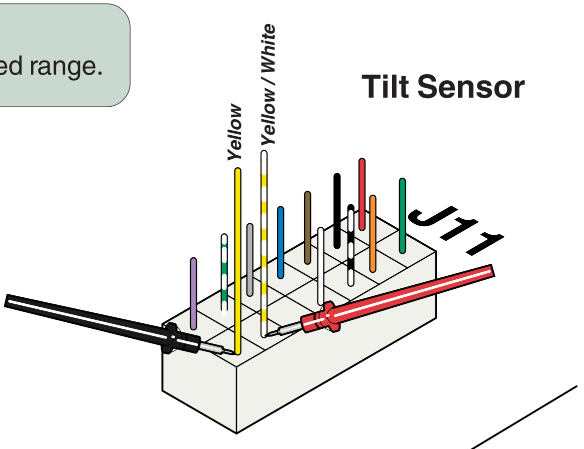
Adjustment

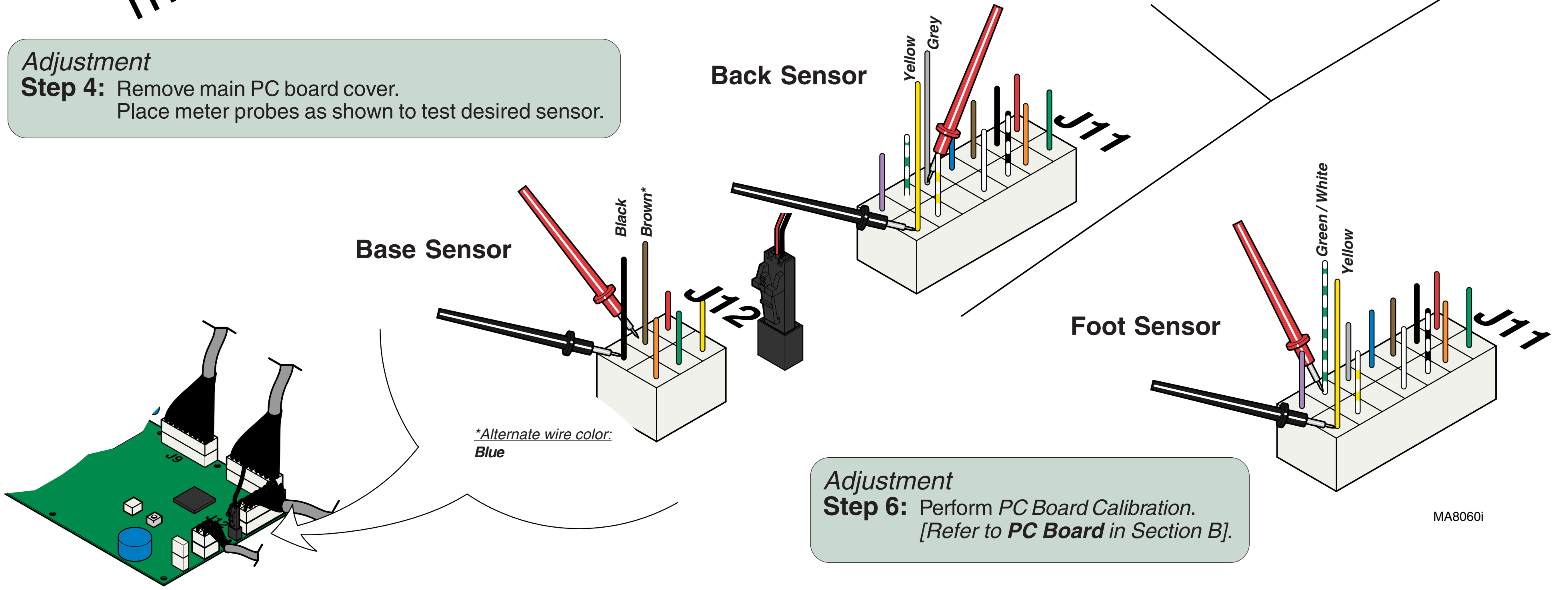


Adjustment
Step 5: Turn sensor knob until voltage reading is in the indicated range.

SENSOR	*FUNCTION POSITION*	*VOLTAGE READING*
BASE	*all the way UP*	*1.7 to 2.1 VDC*
BACK	*all the way UP*	*2.4 to 2.6 VDC*
TILT	*all the way DOWN*	*1.8 to 2.1 VDC*
FOOT	*all the way UP*	*2.4 to 2.6 VDC*

Adjustment
Step 4: Remove main PC board cover.
Place meter probes as shown to test desired sensor.


Yellow
Yellow / White
Tilt Sensor
J11


Back Sensor
Yellow
Grey
J11
Base Sensor
Black
Brown*
J12
J9
Foot Sensor
Green / White
Yellow
J11
MA8060i

**Alternate wire color:*
Blue

Adjustment
Step 6: Perform *PC Board Calibration.*
*[Refer to **PC Board** in Section B].*

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Main PC Board

Error Codes

If the PC Board detects a malfunction in the electrical system, the two Error Code LEDs on the PC Board will flash in a specific sequence to identify the cause of the problem.

How to Display an Error Code

If you suspect a problem with a specific function...

A. Remove PC Board cover / locate Error Code LEDs
B. Press hand/foot control button for desired function.

If an electrical malfunction is detected:

- Function will stop moving.
- You will hear a *"beep"*.
- Error Code LEDs will flash error code sequence.

How to Recall Last Five Error Codes

To recall the last five error codes ...

A. Move both MODE SELECT switches to ON *(up)*.
B. Unplug table *(to reset PC Board)*, then plug back in.
C. Press and release S2 Button.
(To repeat error codes, press S2 Button again)
(To erase all error codes from memory,
press & hold S2 Button until you hear three "beeps")

If there are error codes stored in the system memory:

- Error Code LEDs will flash the sequence of the five most recent error codes.
(You will hear three "beeps" between each error code)

Main PC Board

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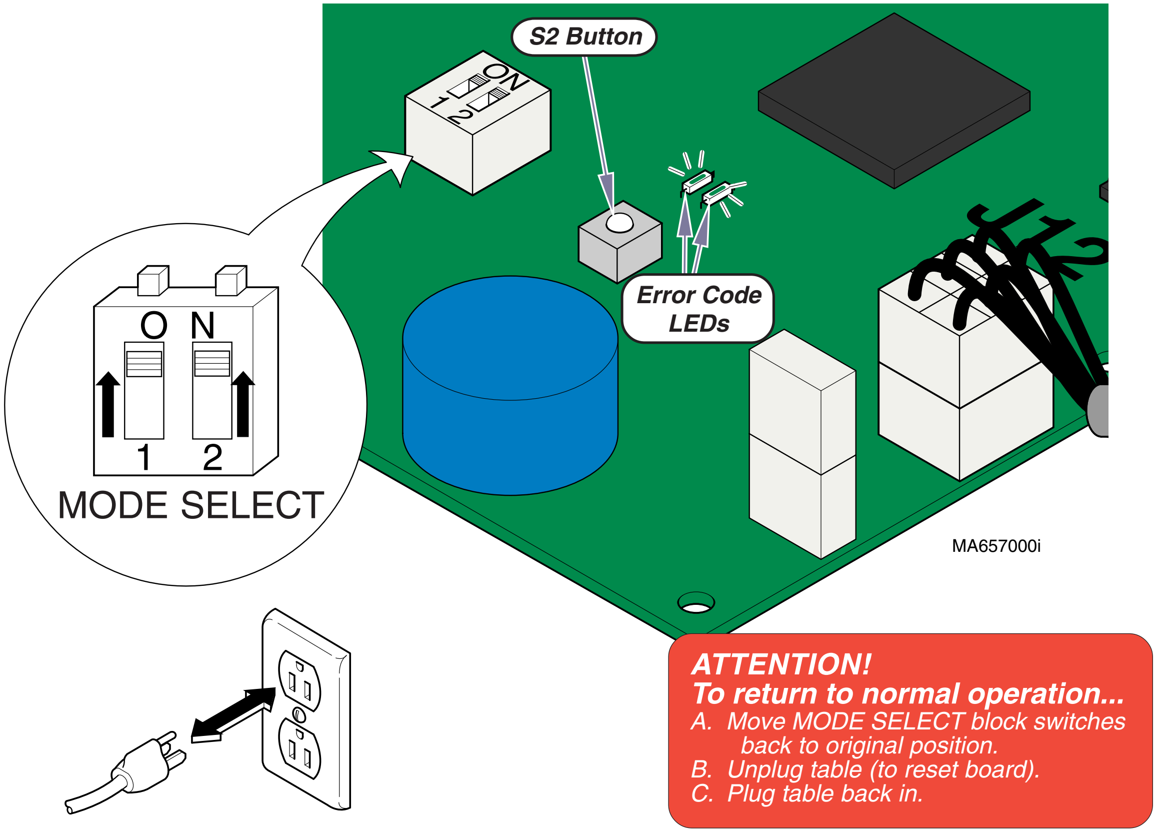
Error Codes:

How To Display / Recall Last Five B-40
Identification (Error Code Charts) B-41
Calibration Procedure B-42
Child Lock-Out Mode B-43
Replacement B-44

PC Board Cover Removal / Installation:

models w/ Standard Base C-2
models w/Rotational Base C-3
Wiring Diagrams D-1
Exploded Views / Part Numbers E-23



ATTENTION!
To return to normal operation...
A. Move MODE SELECT block switches back to original position.
B. Unplug table (to reset board).
C. Plug table back in.

Models: ***ALL***
Serial Numbers:

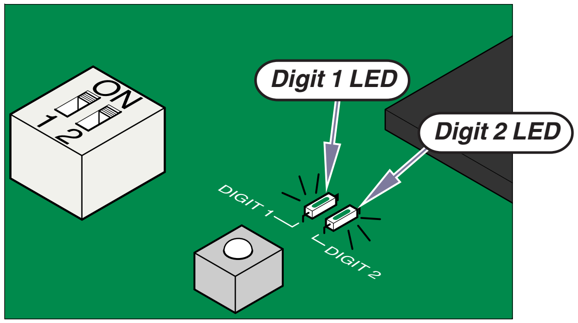
Main PC Board - continued

Error Codes - continued

Identification

Digit 1 LED: This LED identifies the function or mode during which the error was detected.
(ex. Base / Back / Tilt / Foot, Programming Mode, Calibration Mode, Software System)
Record the number of times this LED flashes before Digit 2 LED begins to flash.

Digit 2 LED: This LED identifies cause of the error. *(ex. actuator motor overload, treatment pan out, etc.)*
Record the number of times this LED flashes before Digit 1 LED flashes again.



MA657200i

Locate the two digit error code in the charts below:

(# of flashes) **Digit 1 LED**	**Table Function**	*(# of flashes)* **Digit 2 LED**	**Cause of the Error**
1	BASE	**1**	Function in potential crash position
2	BACK	**2**	Actuator motor run time exceeded max. limit
3	TILT	**3**	Position sensor did not move when function was activated
4	FOOT	**4**	Position sensor reading is out of acceptable range
5	(not used)	**5**	Actuator motor overload
6	(not used)	**6**	Function failed during calibration
7	Programming Mode	**1**	Position Button *(1,2,3, or 4)* not pressed within 5 seconds.
		2	Incorrect button pressed while in Programming Mode.
		3	Position cannot be programmed *(possible "crash" position)*

(# of flashes) **Digit 1 LED**	**Table Function**	*(# of flashes)* **Digit 2 LED**	**Cause of the Error**
8	Calibration Mode	**1**	Calibration was not successful
		2	Incorrect button pressed while in Calibration Mode.
	Error Recall Mode	**3**	Incorrect button pressed while in Error Recall Mode.
9	Software System	**1**	Software malfunction
		2	Software malfunction
		3	Software malfunction
		4	Foot UP function activated w/ Treatment Pan pulled out
		5	Hand/foot control button pressed while in Child Lock-Out Mode
		9	Disregard this error.

Main PC Board - continued

Calibration Procedure

During the Calibration Procedure, the PC Board records the voltage readings from the position sensors as all of the table functions *(base, back, tilt, foot)* move to their maximum, then minimum positions. You will hear a steady pattern of *"beeps"* as the table moves during calibration. When successful calibration is complete, the table will stop moving and you will hear three *"beeps"*.

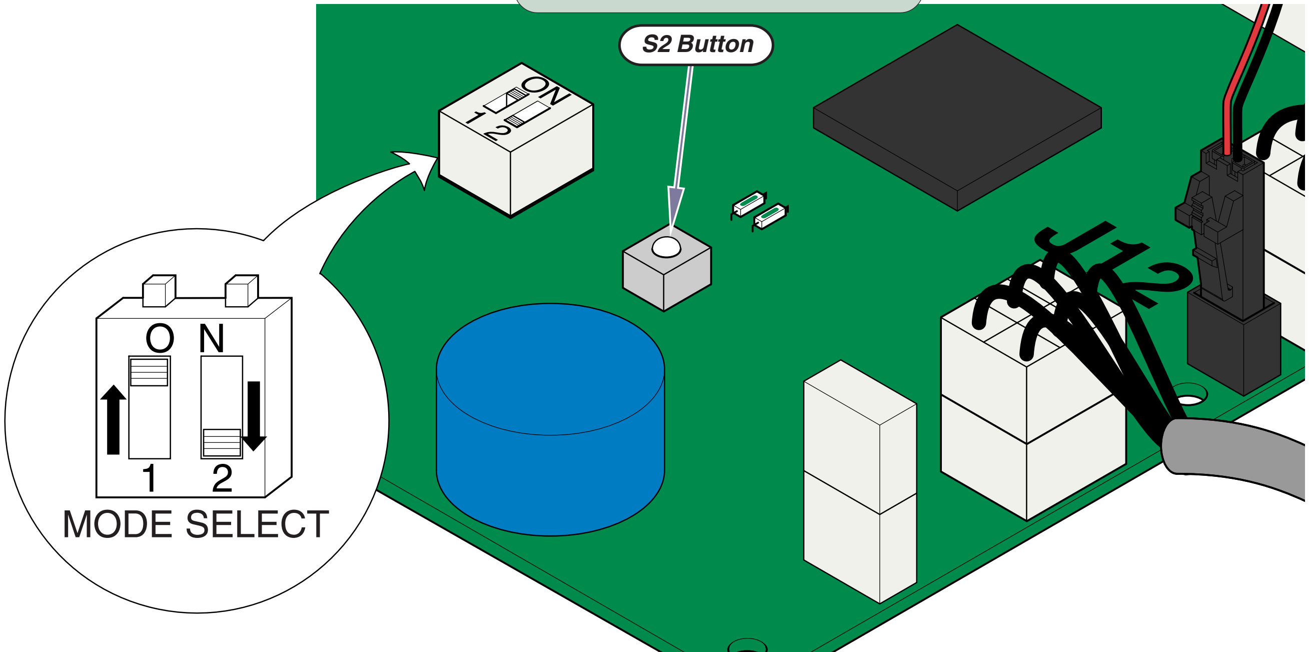
You **must** calibrate the PC Board in the following situations:

- After replacing the PC Board
- After replacing any of the position sensors
- After any of the position sensors are removed or disconnected

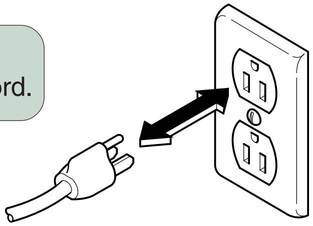
Calibration Procedure
Step 1: Unplug table's power cord.

Calibration Procedure
Step 2: Move MODE SELECT switches:
Switch 1 - ON *(up)*
Switch 2 - off *(down)*
Then, plug table back in.

Calibration Procedure
Step 3: Wait 5 seconds,
then press S2 Button.



MA657300i



ATTENTION!
To return to normal operation...
A. Move MODE SELECT block switches back to original position.
B. Unplug table (to reset board).
C. Plug table back in.

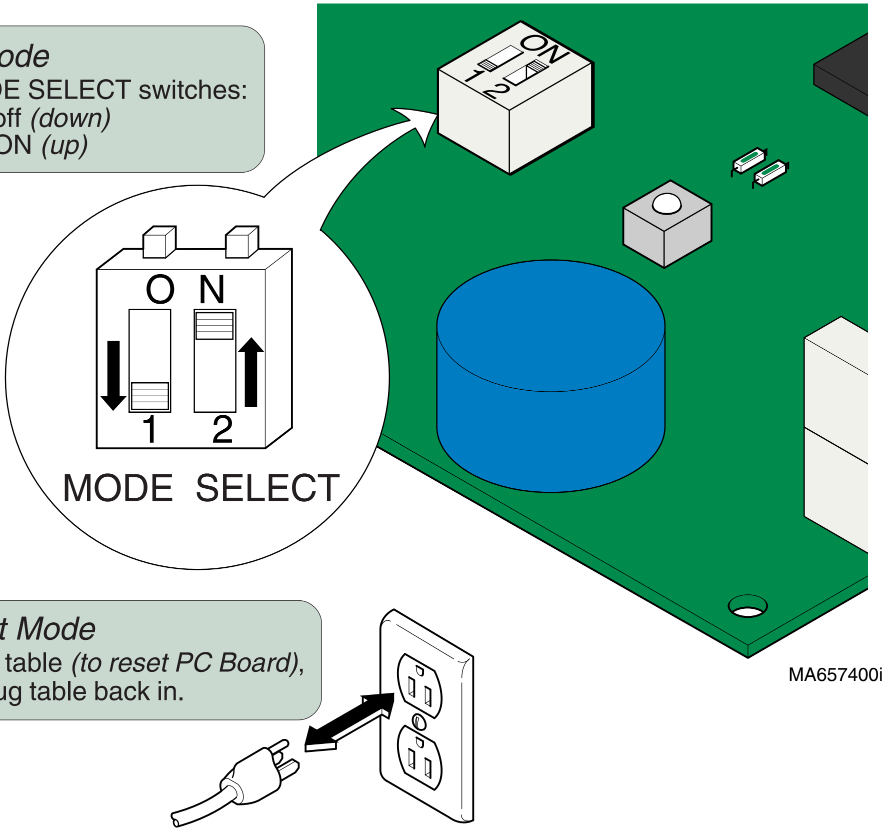
Main PC Board - continued

Child Lock-Out Mode (Programmable models only)

This feature allows the user to lock-out the hand & foot controls to prevent unauthorized use.
***[NOTE:** When the table is in Child Lock-Out Mode, the Position "4" button cannot be used to store a programmed position.]*

Child Lock-Out Mode
Step 1: Move MODE SELECT switches:
Switch 1 - off *(down)*
Switch 2 - ON *(up)*

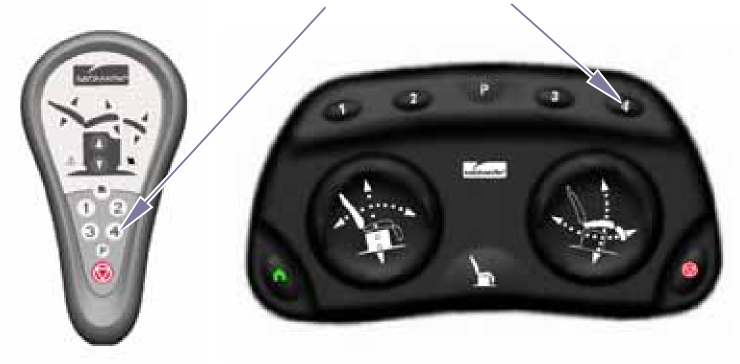
Child Lock-Out Mode
Step 2: Unplug table *(to reset PC Board)*, then plug table back in.



Child Lock-Out Mode
Step 3: ***To lock hand / foot controls...***
Press & hold "4" button on hand / foot control.
*(After 5 seconds you will hear a "beep".
This indicates the controls are locked)*
Note: *If a button is pressed while controls are locked, you will hear a "beep".*

To unlock hand / foot controls...
Press & hold "4" button on hand / foot control.
*(After 5 seconds you will hear a "beep".
This indicates the controls are unlocked)*

Position "4" Button



To deactivate Child Lock-Out Mode...
A. Move MODE SELECT switches:
Switches 1 & 2 - off (down).
B. Unplug table (to reset board).
C. Plug table back in.

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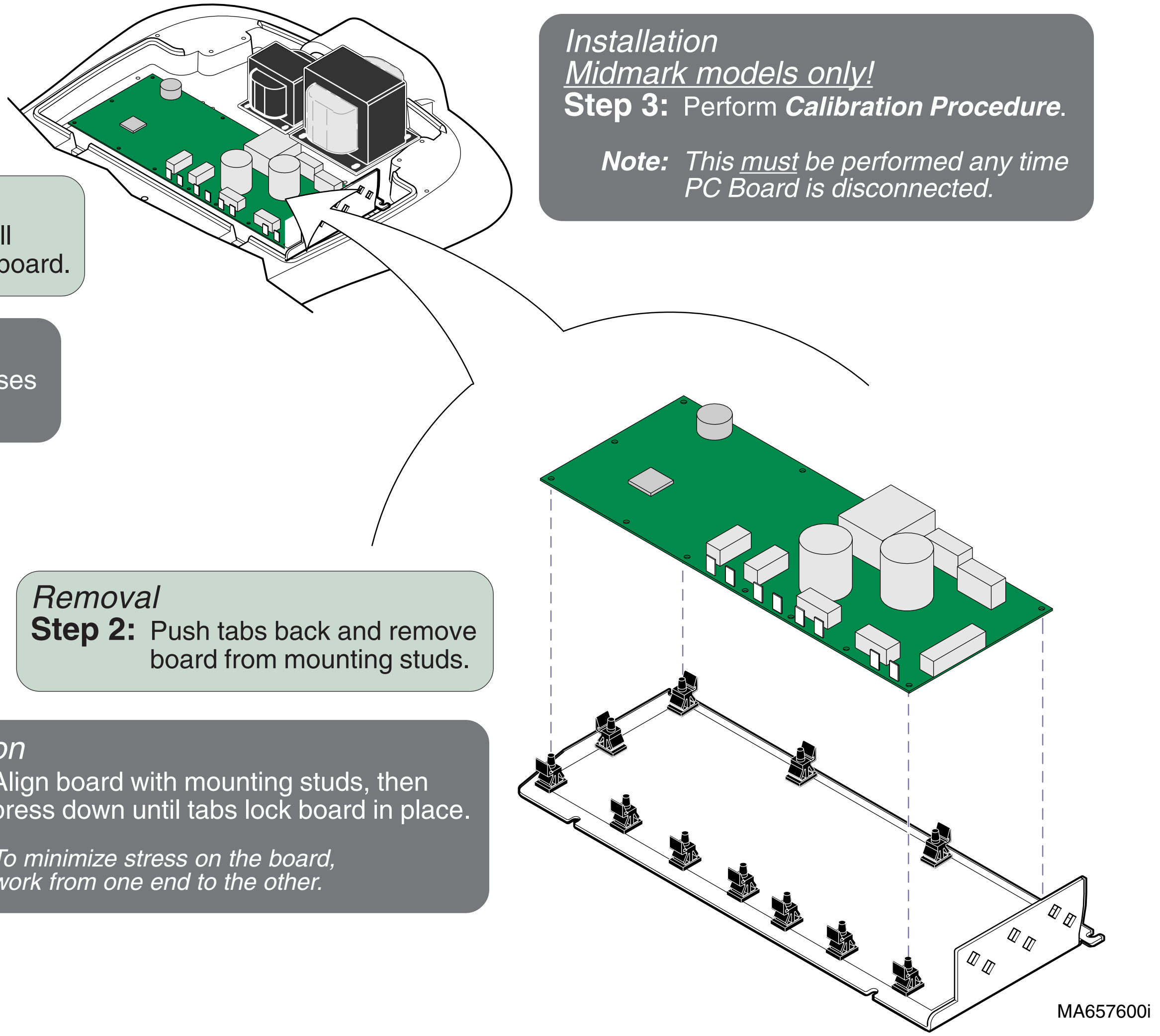
Component Testing & Repair

Main PC Board - continued

Replacement



Removal
Step 1: Tag and disconnect all wire harnesses from board.

Removal
Step 2: Push tabs back and remove board from mounting studs.

Installation
Step 1: Align board with mounting studs, then press down until tabs lock board in place.

Note: *To minimize stress on the board, work from one end to the other.*

Installation
Step 2: Connect all wire harnesses to proper terminals.

Installation
Midmark models only!
Step 3: Perform ***Calibration Procedure***.

Note: *This must be performed any time PC Board is disconnected.*

Upholstery Heater System

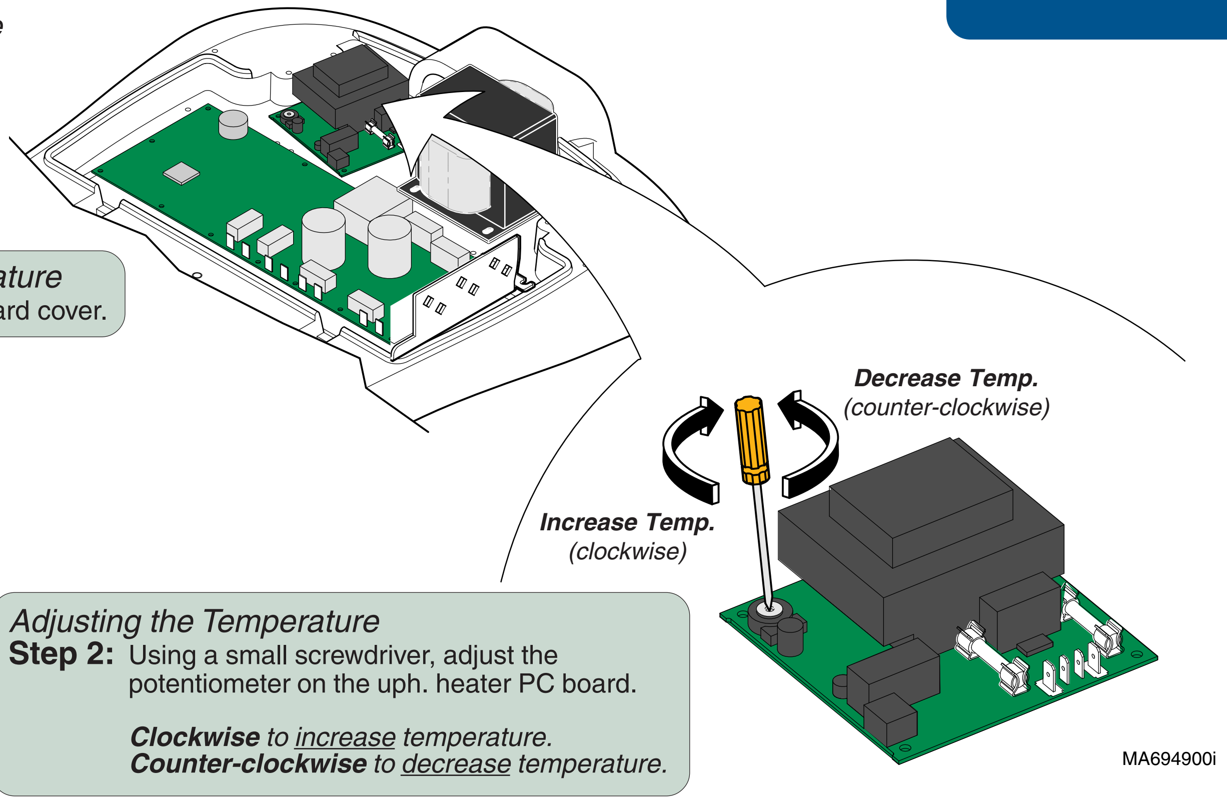
Use the table below to determine the required action.

Problem	***Required Action***
Upholstery heater does not warm up. Heater light does not illuminate	Perform ***Upholstery PC Board Test***
Upholstery heater does not warm up. Heater light illuminates.	Perform ***Upholstery Heater Test***
Upholstery heater - OK Heater light does not illuminate	Check wire connections. Replace heater light.

Upholstery Heater System
Go To Page:

Adjusting the Temperature B-45
Upholstery Heater PC Board Test:
Output Voltage Test B-46
Supply Voltage Test B-47
Upholstery Heater Test B-48
PC Board Replacement B-49
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Wiring Diagrams D-1
Part Numbers E-28

Adjusting the Temperature



Adjusting the Temperature
Step 1: Remove PC board cover.

Adjusting the Temperature
Step 2: Using a small screwdriver, adjust the potentiometer on the uph. heater PC board.

Clockwise *to increase temperature.*
Counter-clockwise *to decrease temperature.*

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Next

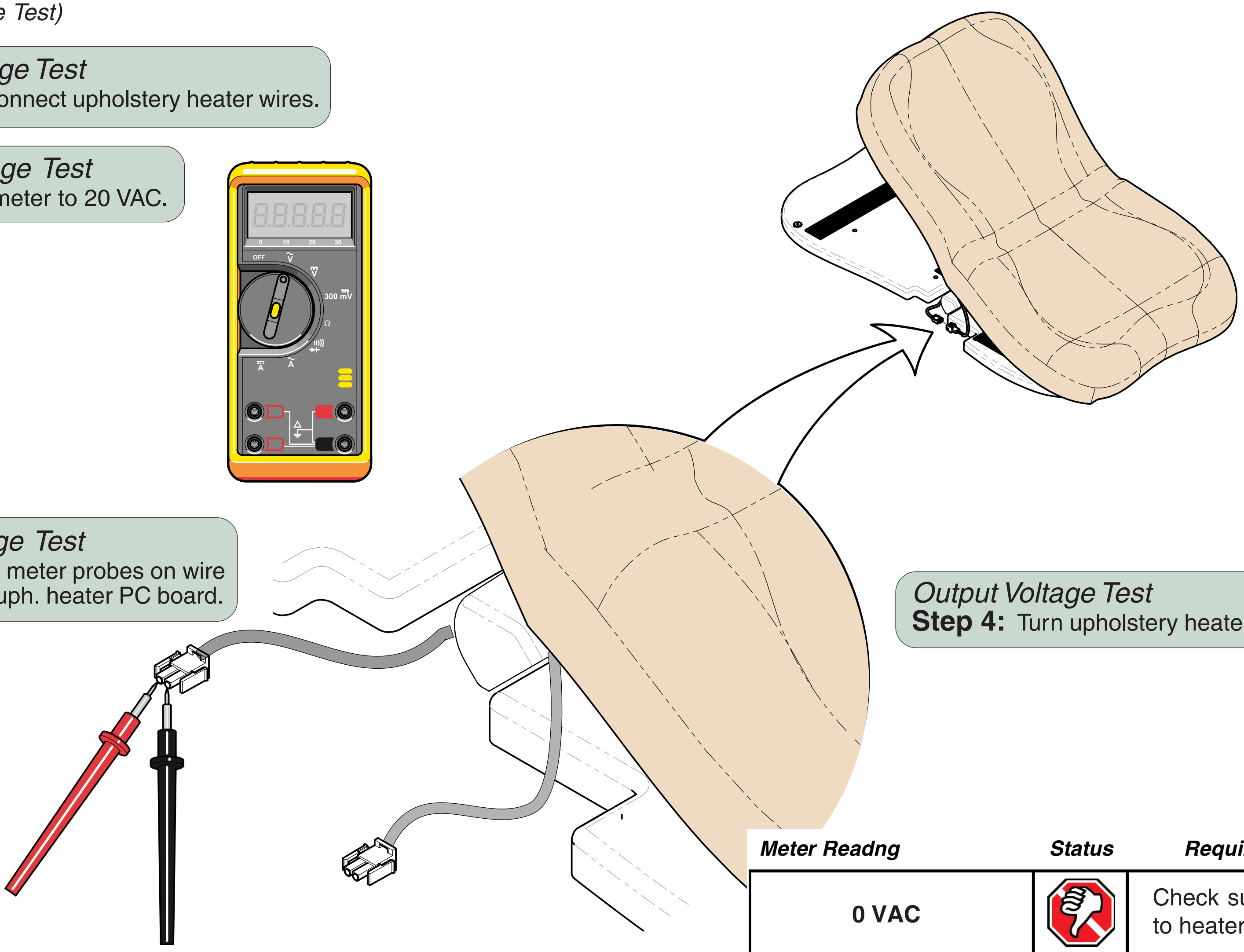
Upholstery Heater System - continued

Upholstery Heater PC Board Test

(Outlook Voltage Test)

Output Voltage Test
Step 1: Disconnect upholstery heater wires.

Output Voltage Test
Step 2: Set meter to 20 VAC.



Output Voltage Test
Step 3: Place meter probes on wire from uph. heater PC board.

Output Voltage Test
Step 4: Turn upholstery heater ON.

Meter Readng	*Status*	*Required Action*
0 VAC	👎	Check supply voltage to heater PC board
14 VAC + /- 3 VAC	👍	Check upholstery heater

Upholstery Heater System - *continued*

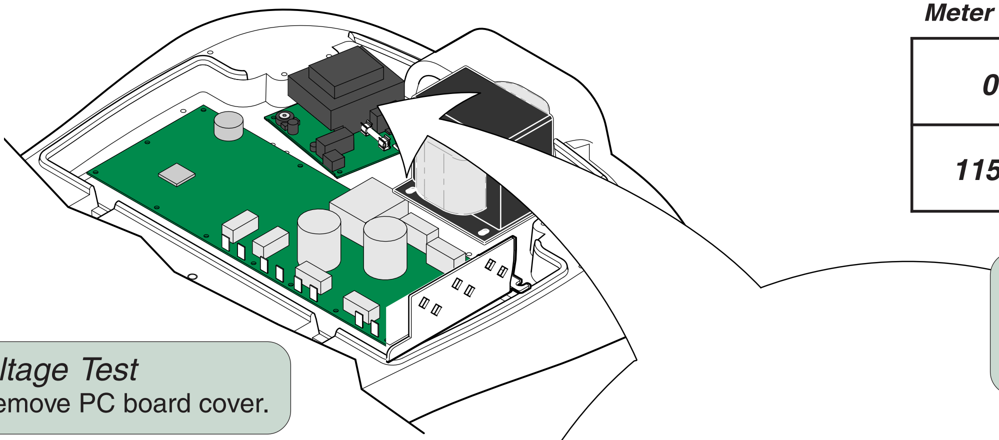
Upholstery Heater PC Board Test - continued

(Supply Voltage Test)

Refer To:
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3
Go To Page:

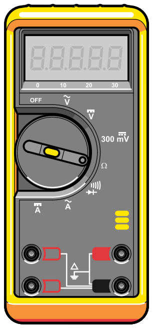
Caution
The power cord must be plugged in when performing this test.

Meter Readng	*Status*	*Required Action*
***0* VAC**	👎	Check incoming power supply to the table.
***115* VAC**	👍	Check wire connections & fuses on uph. heater PCB.

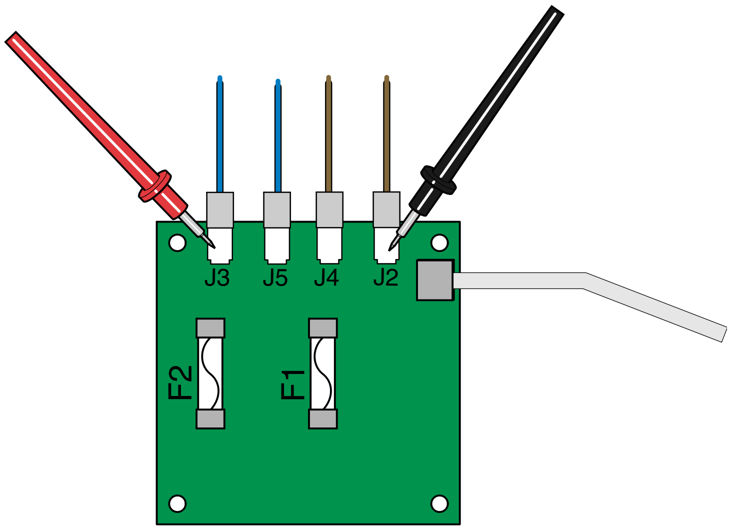


Supply Voltage Test
Step 1: Remove PC board cover.

Supply Voltage Test
Step 2: Set meter to 200 VAC.



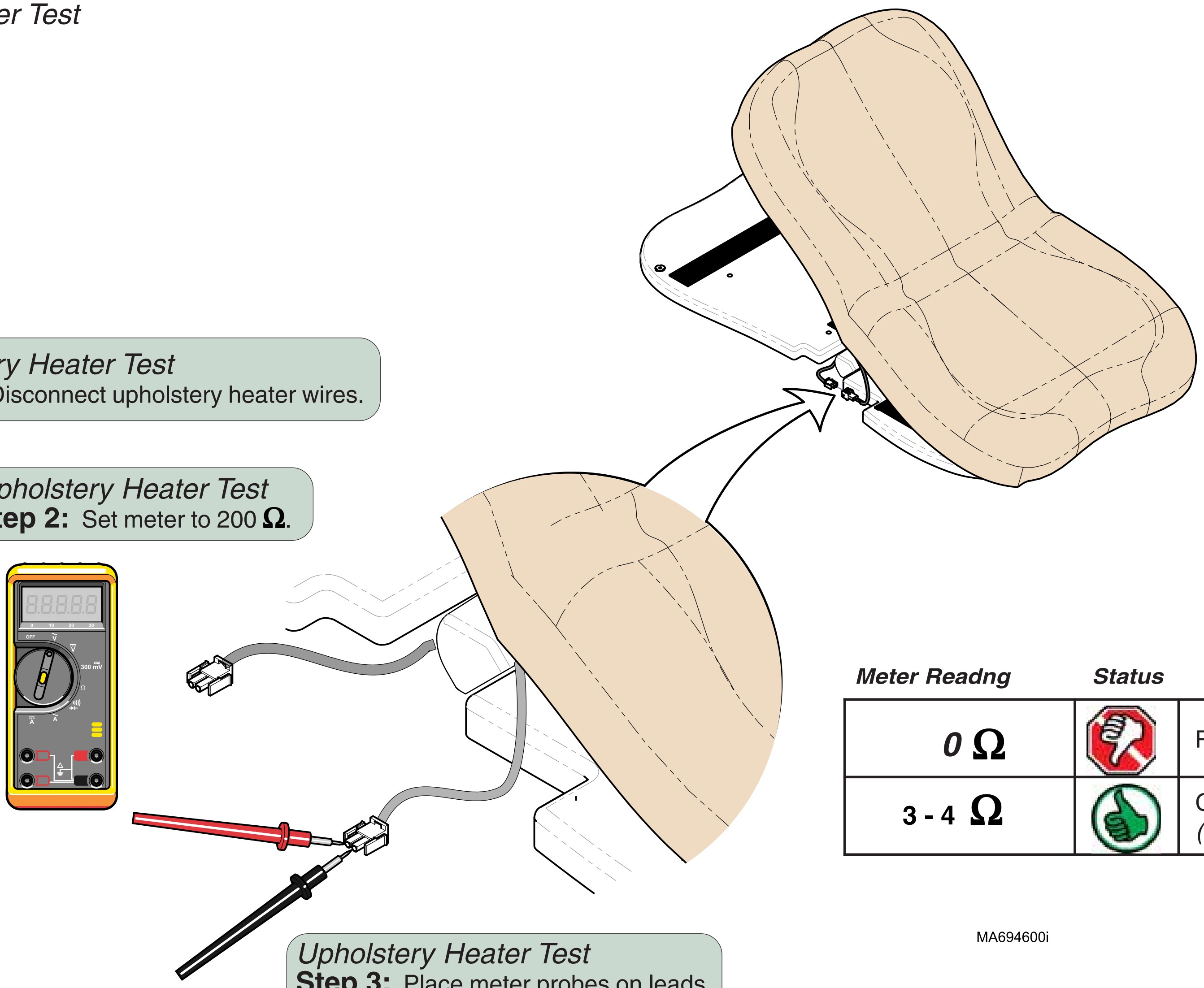
Supply Voltage Test
Step 3: With wires & power cord connected, place meter probes on J2 & J3 terminals on upholstery heater PC board.



MA694800i

Upholstery Heater System - continued

Upholstery Heater Test



Upholstery Heater Test
Step 1: Disconnect upholstery heater wires.

Upholstery Heater Test
Step 2: Set meter to 200 **Ω**.

Upholstery Heater Test
Step 3: Place meter probes on leads from upholstery heater.

Meter Readng	*Status*	*Required Action*
0 **Ω**	👎	Replace Upholstery
3 - 4 Ω	👍	Check hand control. *(Upholstery Heater button)*

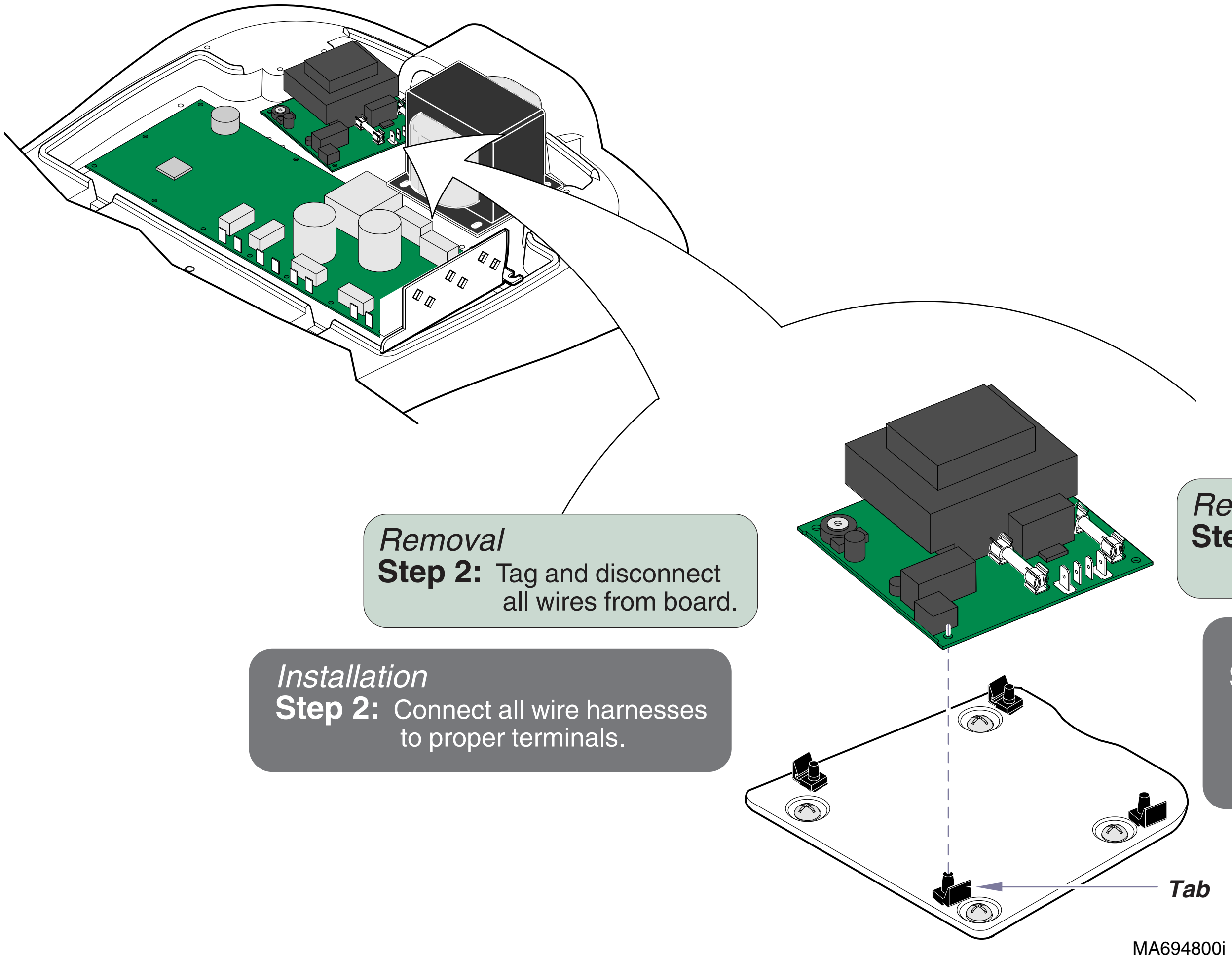
MA694600i

Upholstery Heater System - *continued*

Upholstery Heater PC Board Replacement

Refer To:
Go To Page:
PC Board Cover Removal:
models w/ Standard Base C-2
models w/Rotational Base C-3

Removal
Step 1: Remove PC board cover.



Removal
Step 2: Tag and disconnect all wires from board.

Removal
Step 3: Push tabs back and remove board from mounting studs.

Installation
Step 1: Align board with mounting studs, then press down until tabs lock board in place.

Note: *To minimize stress on the board, work from one end to the other.*

Installation
Step 2: Connect all wire harnesses to proper terminals.

Headrest Mechanism

Handle Tension Adjustment

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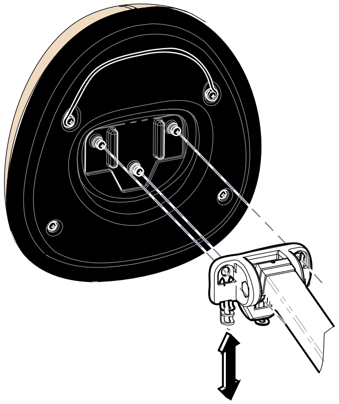
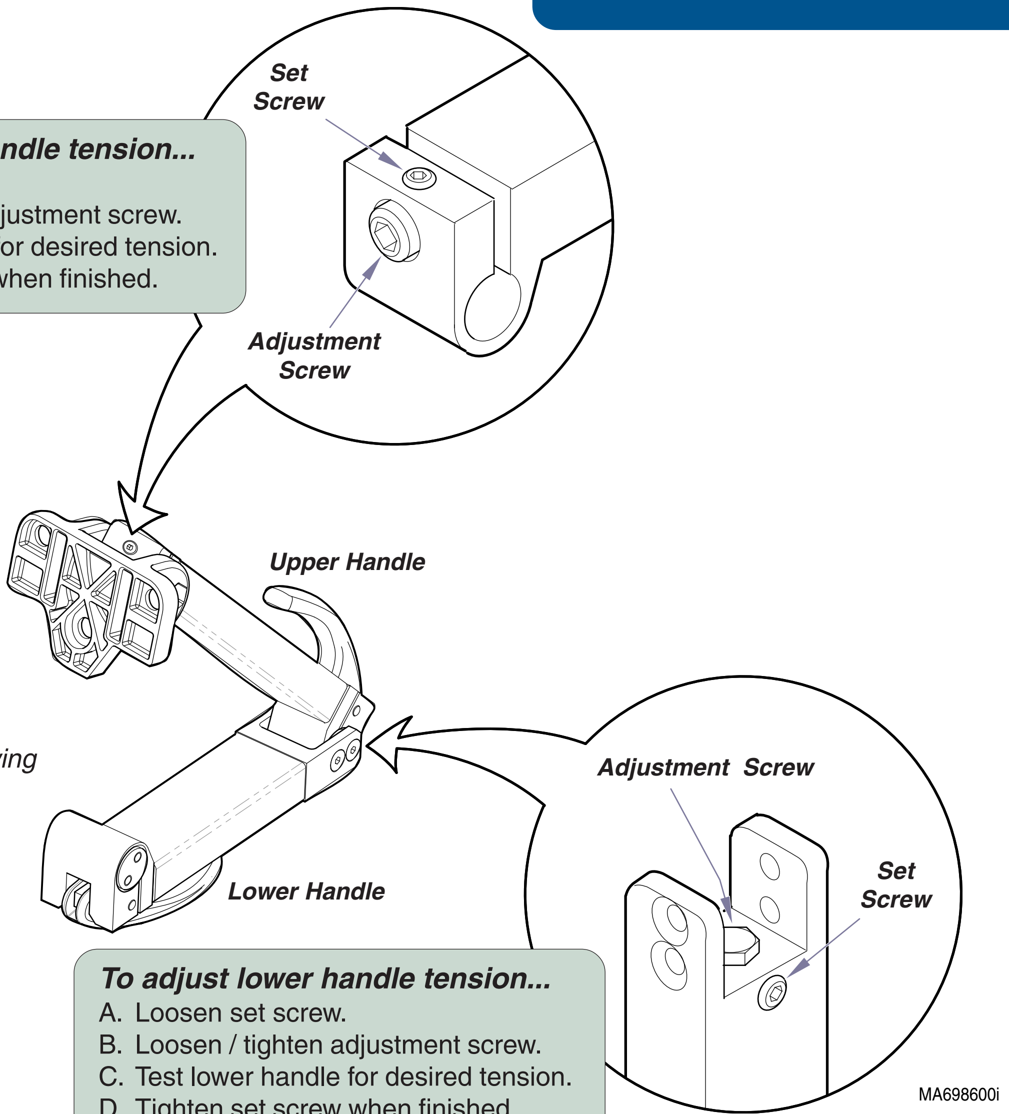
Headrest MechanismPage
Handle Tension Adjustment B-50
Exploded View / Part Numbers E-13




Set Screw
Adjustment Screw
Upper Handle
Lower Handle
Adjustment Screw
Set Screw
MA698600i

To adjust upper handle tension...
A. Loosen set screw.
B. Loosen / tighten adjustment screw.
C. Test upper handle for desired tension.
D. Tighten set screw when finished.

To adjust lower handle tension...
A. Loosen set screw.
B. Loosen / tighten adjustment screw.
C. Test lower handle for desired tension.
D. Tighten set screw when finished.

⚠ ***Caution***
Adjusting the handle tension changes the amount of pressure the headrest will support.

The headrest must safely support the patients head when the table is in use. Always test the headrest following any handle tension adjustment.

Models: ***ALL***
Serial Numbers:

Rotational Base Brake System

Magnet Position Adjustment

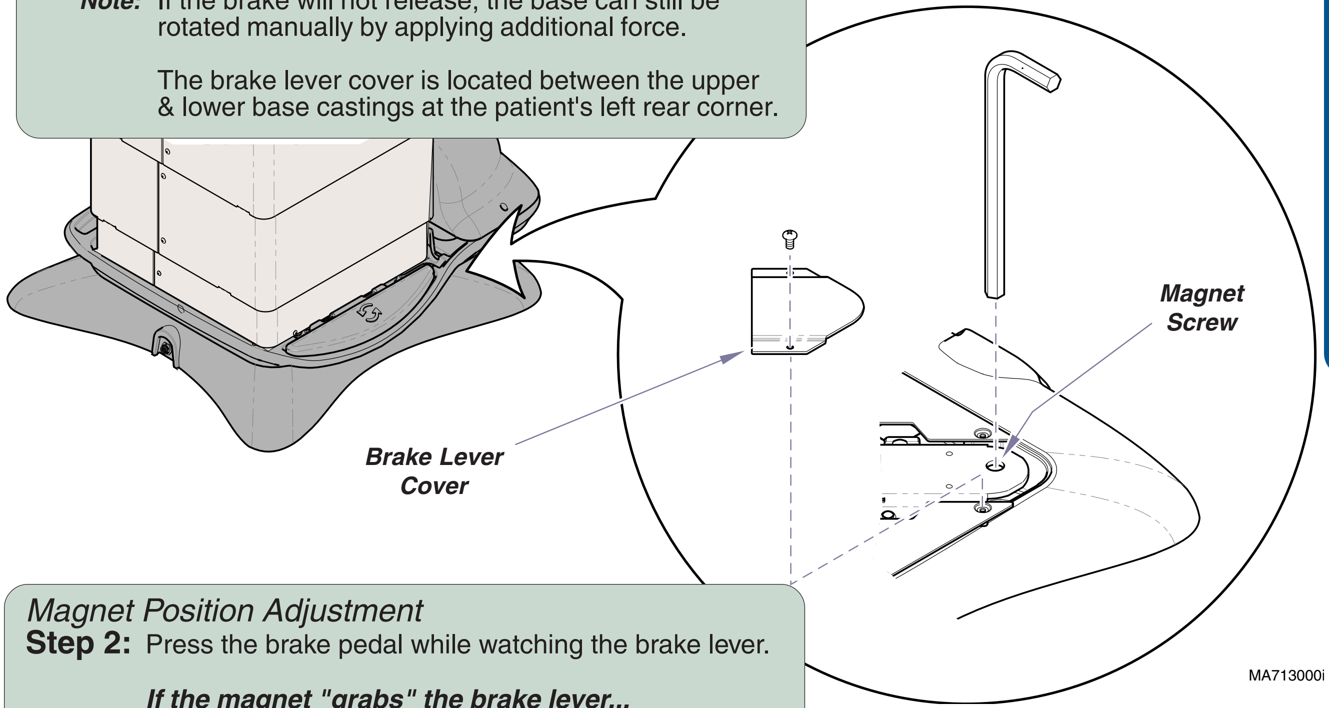
If the rotational brake will not unlock, the electro-magnet may be out of adjustment.

Magnet Position Adjustment

Step 1: Rotate the base to access the brake lever cover. Remove brake lever cover.

Note: If the brake will not release, the base can still be rotated manually by applying additional force.

The brake lever cover is located between the upper & lower base castings at the patient's left rear corner.



Magnet Position Adjustment

Step 2: Press the brake pedal while watching the brake lever.

If the magnet "grabs" the brake lever...
Tighten the magnet screw 1/4 turn.

If the magnet does not "grab" the brake lever...
Loosen the magnet screw 1/4 turn.

Check for proper operation. Repeat if necessary.

Rotational Base Brake System

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Magnet Position Adjustment B-51
Rotational Brake Electrical Test /
Fuse Location B-52
Electro-magnet Test B-53
EMI Filter Board Test........................... B-54
Rot. Base PC Board Replacement B-55
Brake Pedal Switch Replacement B-56
Seperating Upper & Lower
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Foot Control Inlet / Power Inlet /
EMI Filter Board Replacement B-63
Wiring Diagrams D-1
Exploded View / Part Numbers:
Lower Section E-29
Upper Section E-30

Models: **Serial Numbers:**	***230*** *(-003)* All	***630*** *(-005 & -006)* All

Component Testing & Repair

Rotational Base Brake System - continued

Rotational Brake Electrical Test / Fuse Location

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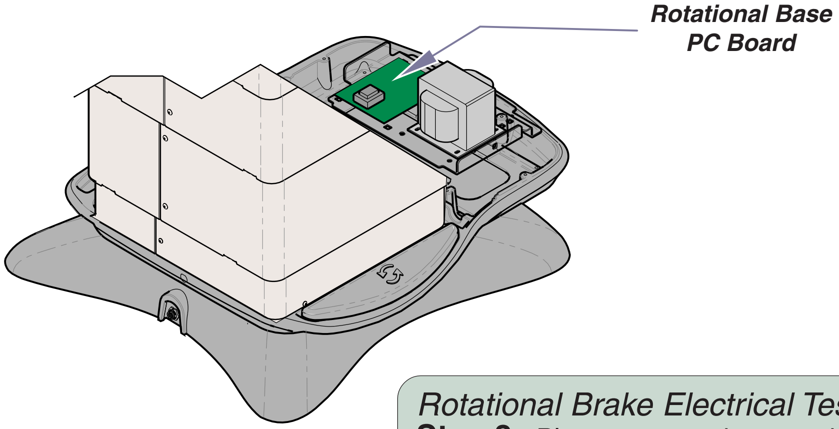
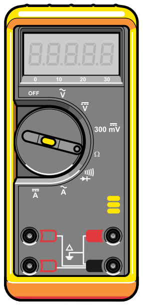
Rot. Base PC Board Replacement B-55
PC Board Cover Removal C-3

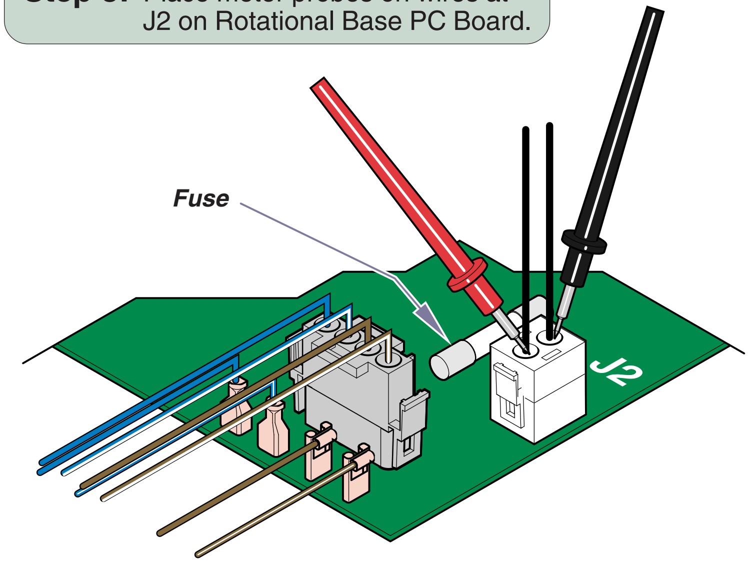
Rotational Brake Electrical Test.
Step 1: Remove PC board cover.
Refer to: Section C - PC Board Cover





Rotational Brake Electrical Test
Step 2: Set meter to **VAC.**

Rotational Brake Electrical Test
Step 3: Place meter probes on wires at J2 on Rotational Base PC Board.



Rotational Brake Electrical Test
Step 4: Check voltage.

Note: If no voltage is detected, press & release the brake pedal - check voltage again.

Meter Reading	*Status*	*Required Action*
15 - 21 VAC	👍	PC board is OK. Perform *Electro-magnet Test.*
0 VAC	👎	Check Rot. Base PC board fuse. If fuse is OK, replace PC board.

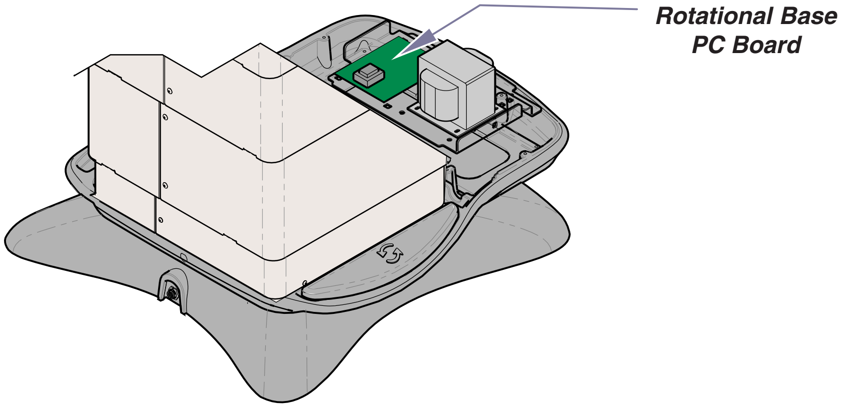
MA713100i

Rotational Base Brake System - continued

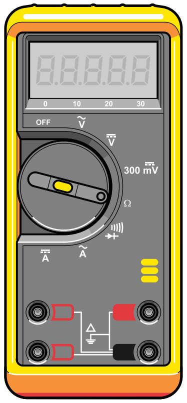
Electro-magnet Test

Refer to: Go To Page:
Electro-magnet Replacement B-62
PC Board Cover Removal C-3

Electro-magnet Test.
Step 1: Remove PC board cover.
Refer to: Section C - PC Board Cover

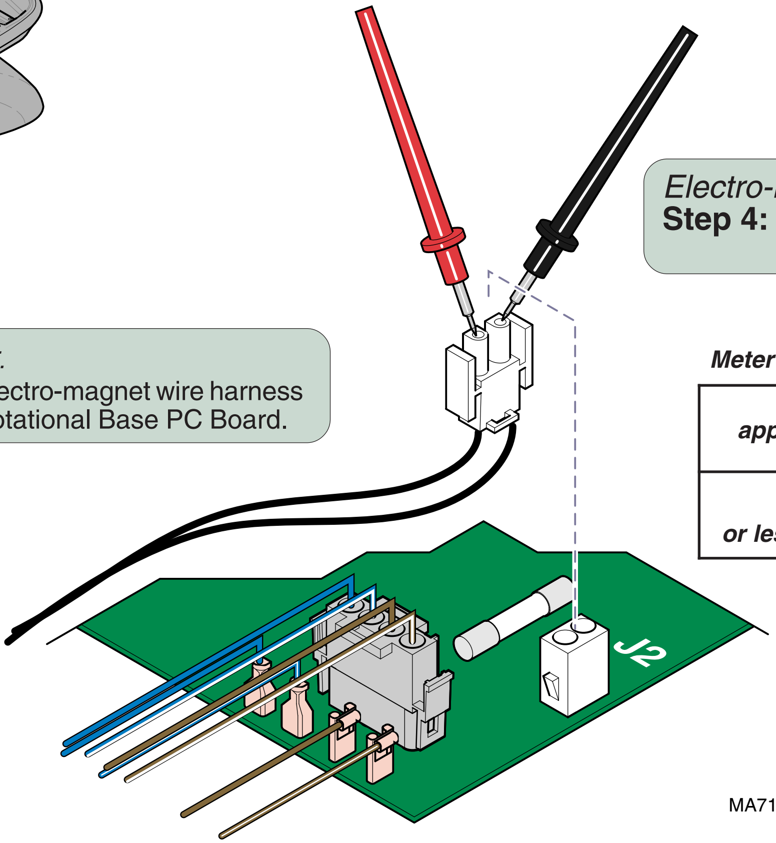


Electro-magnet Test.
Step 2: Set meter to **Ω.**



Electro-magnet Test.
Step 3: Disconnect electro-magnet wire harness from J2 on Rotational Base PC Board.

Electro-magnet Test.
Step 4: Place meter probes on wire harness.



MA713200i

Meter Reading	Status	Required Action
approx. 10 **Ω**	👍	Electro-magnet is OK. Check mechanical components.
OL - *or less than 5* **Ω**	👎	Inspect magnet wire harness. If OK, replace electro-magnet.

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Go To Table Of Contents
Next

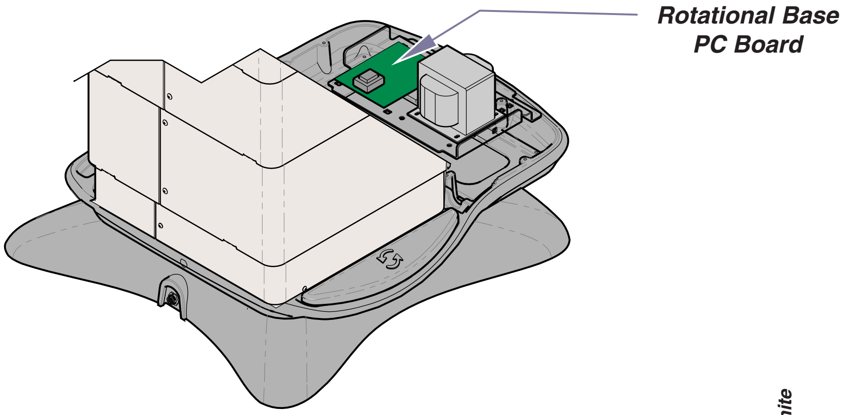
Rotational Base Brake System - continued

Refer to: **Go To Page:**
Primary Fuses B-2
EMI Filter Board Replacement B-63
PC Board Cover Removal C-3

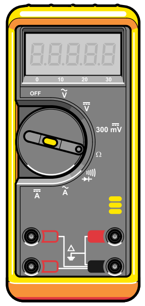
EMI Filter Board Test

This test allows you to check for line voltage coming thru the EMI filter board without separating the upper & lower base castings.

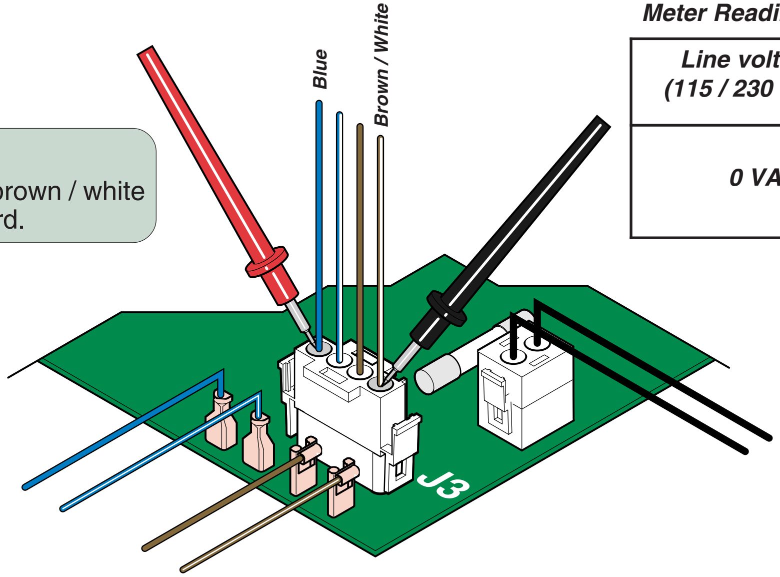
Rotational Brake Electrical Test.
Step 1: Remove PC board cover.
Refer to: Section C - PC Board Cover



Rotational Brake Electrical Test
Step 2: Set meter to **VAC.**



Rotational Brake Electrical Test
Step 3: Place meter probes on blue wire and brown / white wire at J3 on Rotational Base PC Board.



Meter Reading	*Status*	*Required Action*
Line voltage (115 / 230 VAC)	👍	EMI Filter board is OK. Check connections to main PC board.
0 VAC	👎	Check primary fuses & wire harness. If fuses & harness are OK, replace EMI filter board.

MA717800i

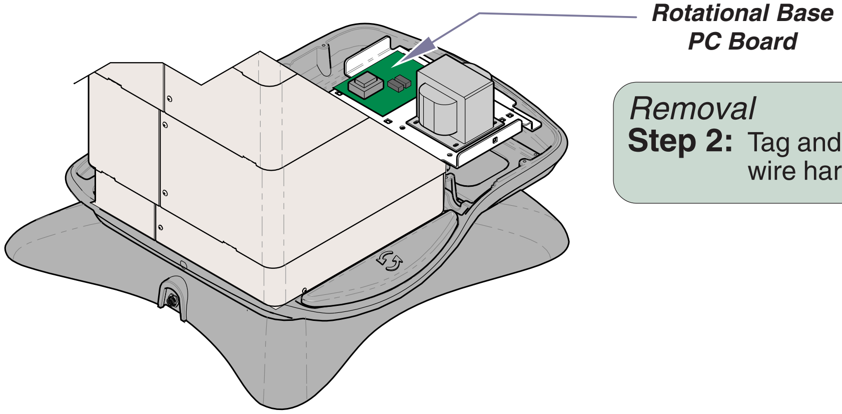
Rotational Base Brake System - continued

Rotational Base PC Board Replacement

Refer to: **Go To Page:**

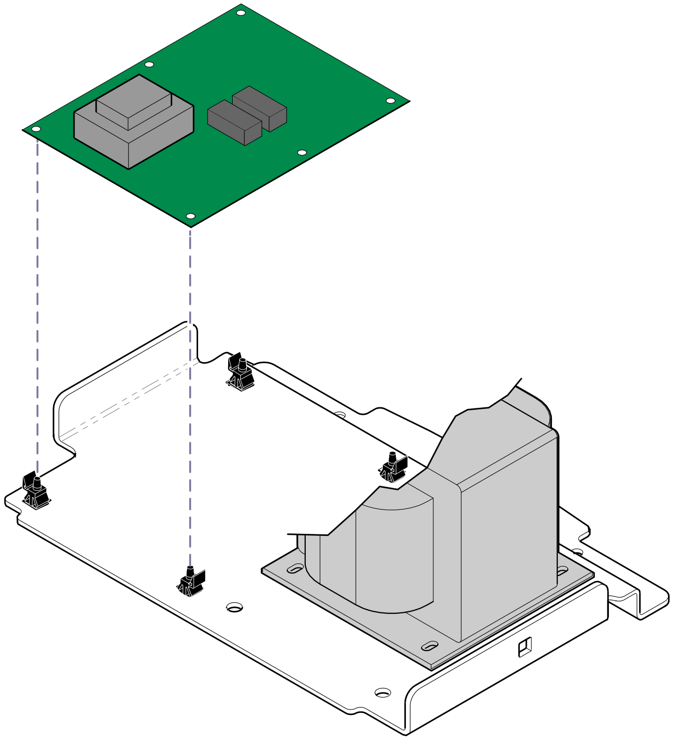
PC Board Cover Removal C-3

Removal.
Step 1: Remove PC board cover.
Refer to: Section C - PC Board Cover



Removal
Step 2: Tag and disconnect all wire harnesses from board.

Installation
Step 2: Connect all wire harnesses to proper terminals.



Removal
Step 3: Push tabs back and remove board from mounting studs.

Installation
Step 1: Align board with mounting studs, then press down until tabs lock board in place.

Note: *To minimize stress on the board, work from one end to the other.*

Component Testing & Repair

Rotational Base Brake System - continued

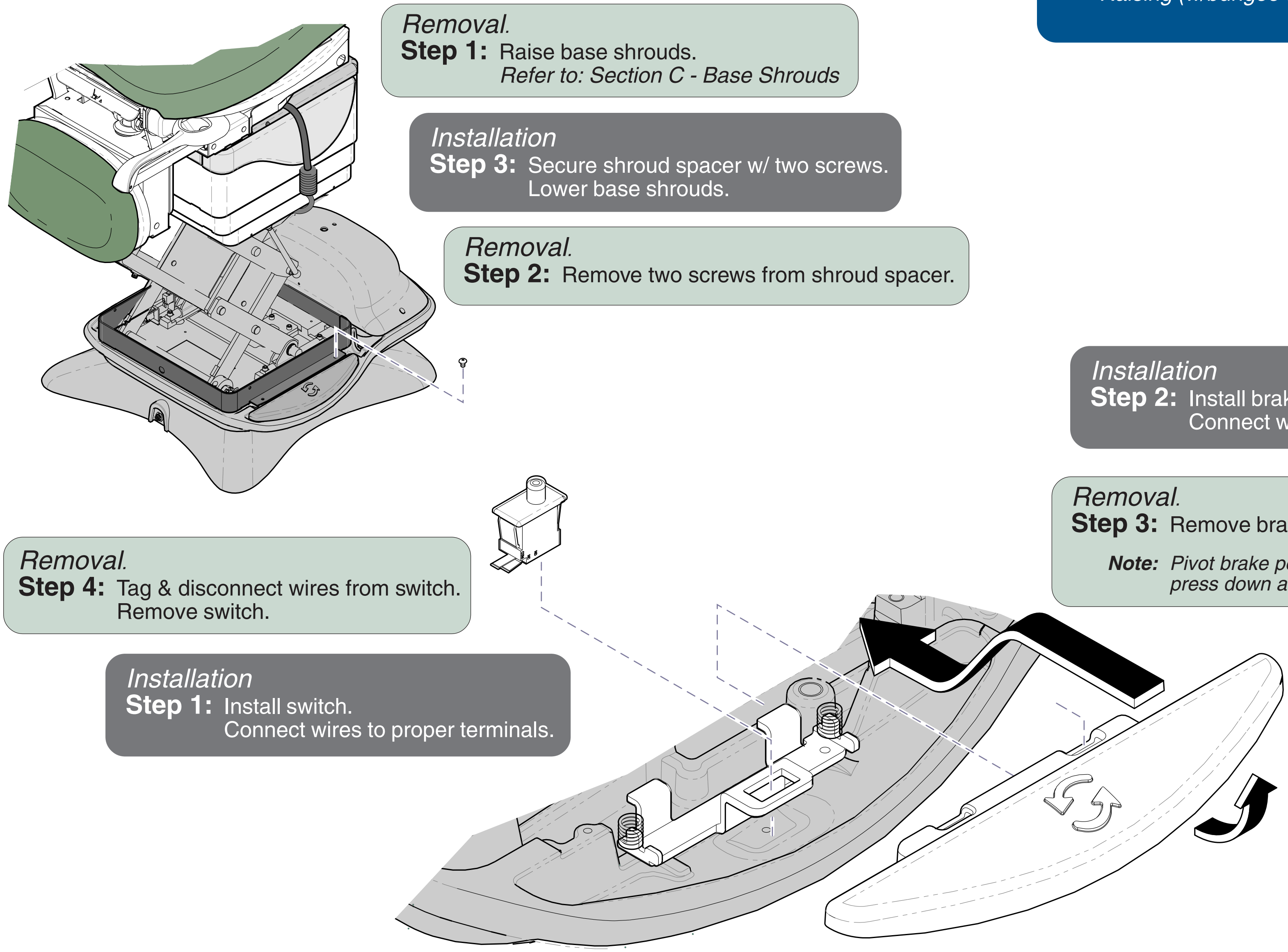
Brake Pedal Switch Replacement

Refer To:

Go To Page:

Base Shrouds:

Raising (w/bungee cord) C-4



Removal.
Step 1: Raise base shrouds.
Refer to: Section C - Base Shrouds

Removal.
Step 2: Remove two screws from shroud spacer.

Removal.
Step 3: Remove brake pedal.
Note: *Pivot brake pedal toward column, then press down and push forward to release.*

Removal.
Step 4: Tag & disconnect wires from switch.
Remove switch.

Installation
Step 1: Install switch.
Connect wires to proper terminals.

Installation
Step 2: Install brake pedal.
Connect wires to proper terminals.

Installation
Step 3: Secure shroud spacer w/ two screws.
Lower base shrouds.

MA715000i

Models: **Serial Numbers:**	**230** (-003) All	**630** (-005 & -006) All

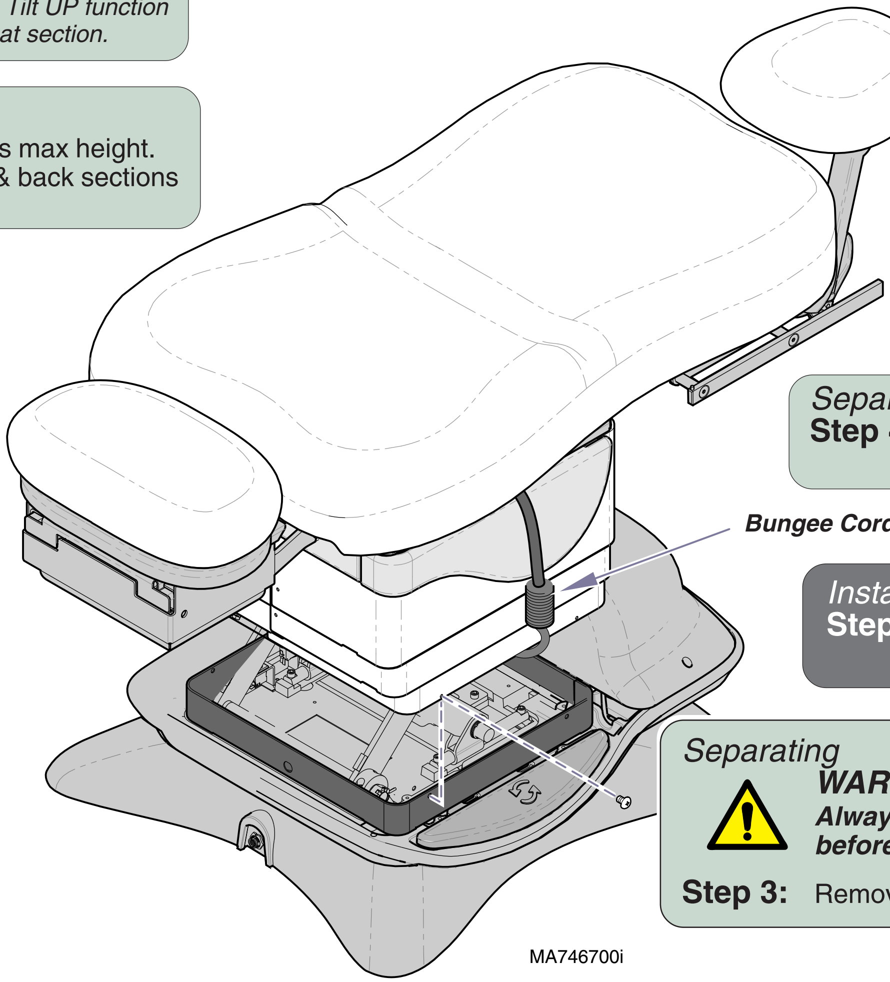
Rotational Base Brake System - *continued*

Separating Upper & Lower Base Castings

Separating
Step 1: Route bungee cord across top of base column *(under seat)*.

Note: *It may be necessary to run the Tilt UP function to route bungee cord under seat section.*

Separating
Step 2: Run Base UP function to its max height. Position table so that foot & back sections are level as shown.



Separating
Step 4: Raise shrouds, then attach bungee cord hooks under shrouds on both sides.

Installation
Step 10: Remove bungee cord. Secure inner shrouds w/screws.

Separating
WARNING
⚠ ***Always disconnect table power cord before removing any covers or shrouds.***

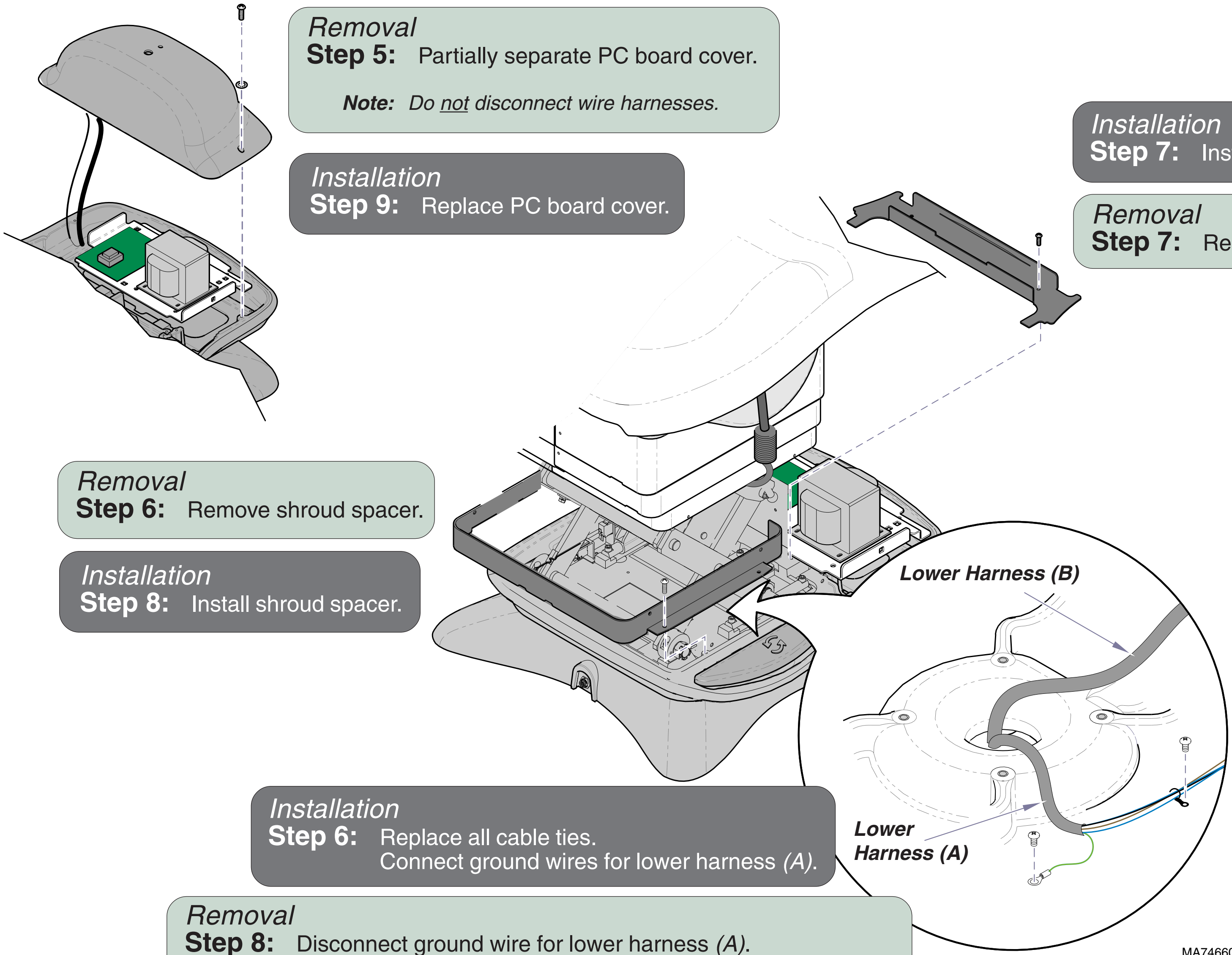
Step 3: Remove bottom screws from inner shrouds.

Procedure continued on following page...

Component Testing & Repair

Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued



Removal
Step 5: Partially separate PC board cover.

Note: *Do not disconnect wire harnesses.*

Installation
Step 9: Replace PC board cover.

Installation
Step 7: Install wire harness cover.

Removal
Step 7: Remove wire harness cover.

Removal
Step 6: Remove shroud spacer.

Installation
Step 8: Install shroud spacer.

Installation
Step 6: Replace all cable ties.
Connect ground wires for lower harness *(A)*.

Removal
Step 8: Disconnect ground wire for lower harness *(A)*.
Remove cable ties securing lower harnesses *(A & B)* to base.

Procedure continued on following page...

Models:	***230*** *(-003)*	***630*** *(-005 & -006)*
Serial Numbers:	All	All

Rotational Base Brake System - continued

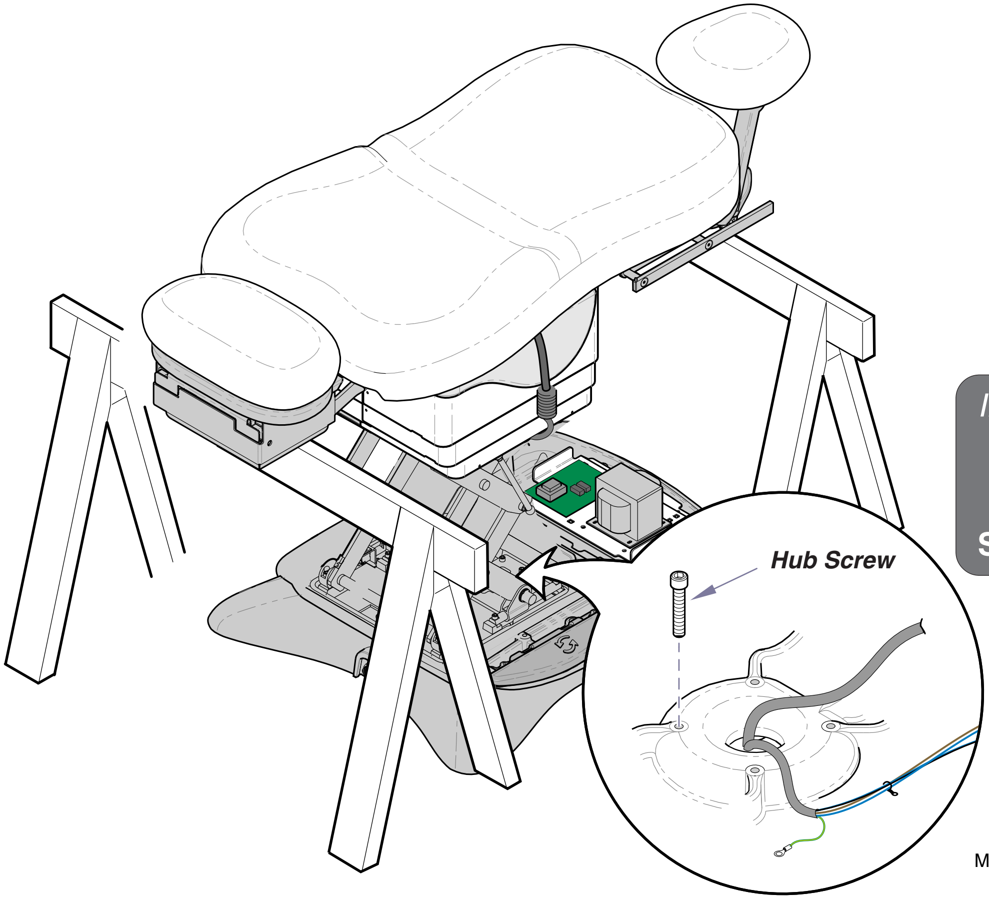
Separating Upper & Lower Base Castings - continued

Removal

CAUTION

⚠ *The table weighs approx. 540 lbs (244 kg).
Use supports designed for this amount of weight.*

Step 9: Position sawhorses *(or other suitable supports)* under back section weldment & foot section weldment.



Installation

WARNING

⚠ ***Disconnect the table power cord before performing the remaining Installation steps.***

Step 5: Install four hub screws.

Removal

CAUTION

⚠ *The table top / upper base is not secured once the hub screws are removed. Hold onto the table when performing the following steps.*

Step 10: Remove four hub screws.

Procedure continued on following page...

Component Testing & Repair

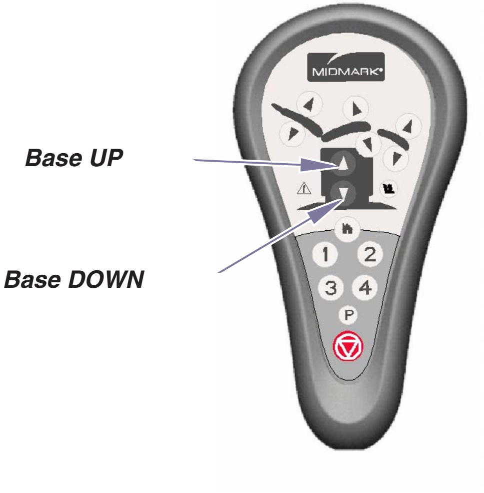
Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued

Removal & Installation

WARNING

The Removal & Installation steps on this page require power to be connected to the table. Avoid all contact with wiring & electrical components.



Base UP
Base DOWN
MIDMARK
1
2
3
4
P

Removal

Equipment Alert

The two lower wire harnesses are still conected to upper casting. Running the Base Down function too long may result in damage to the table.

Step 11: Press **Base DOWN** button on hand or foot control until upper and lower base castings separate slightly.

Installation

CAUTION

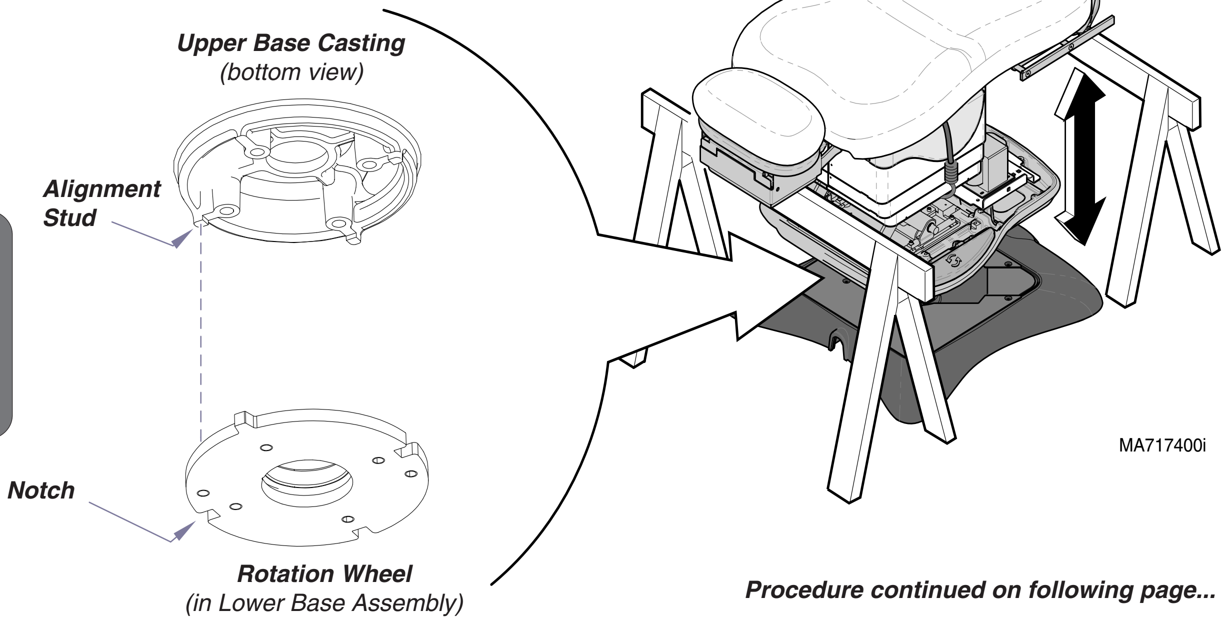
The table top / upper base is not secured until the hub screws are installed. Hold onto the table when performing the following steps.

Step 3: Press **Base UP** button on hand / foot control until table raises (slightly) off of sawhorses.

Installation

Step 4: Carefully adjust table top until alignment studs on bottom of upper casting lock into the notches on the rotation wheel.

Note: *You will feel table top drop into place when alignment studs engage notches.*



Upper Base Casting
(bottom view)
Alignment Stud
Notch
Rotation Wheel
(in Lower Base Assembly)
MA717400i

Procedure continued on following page...

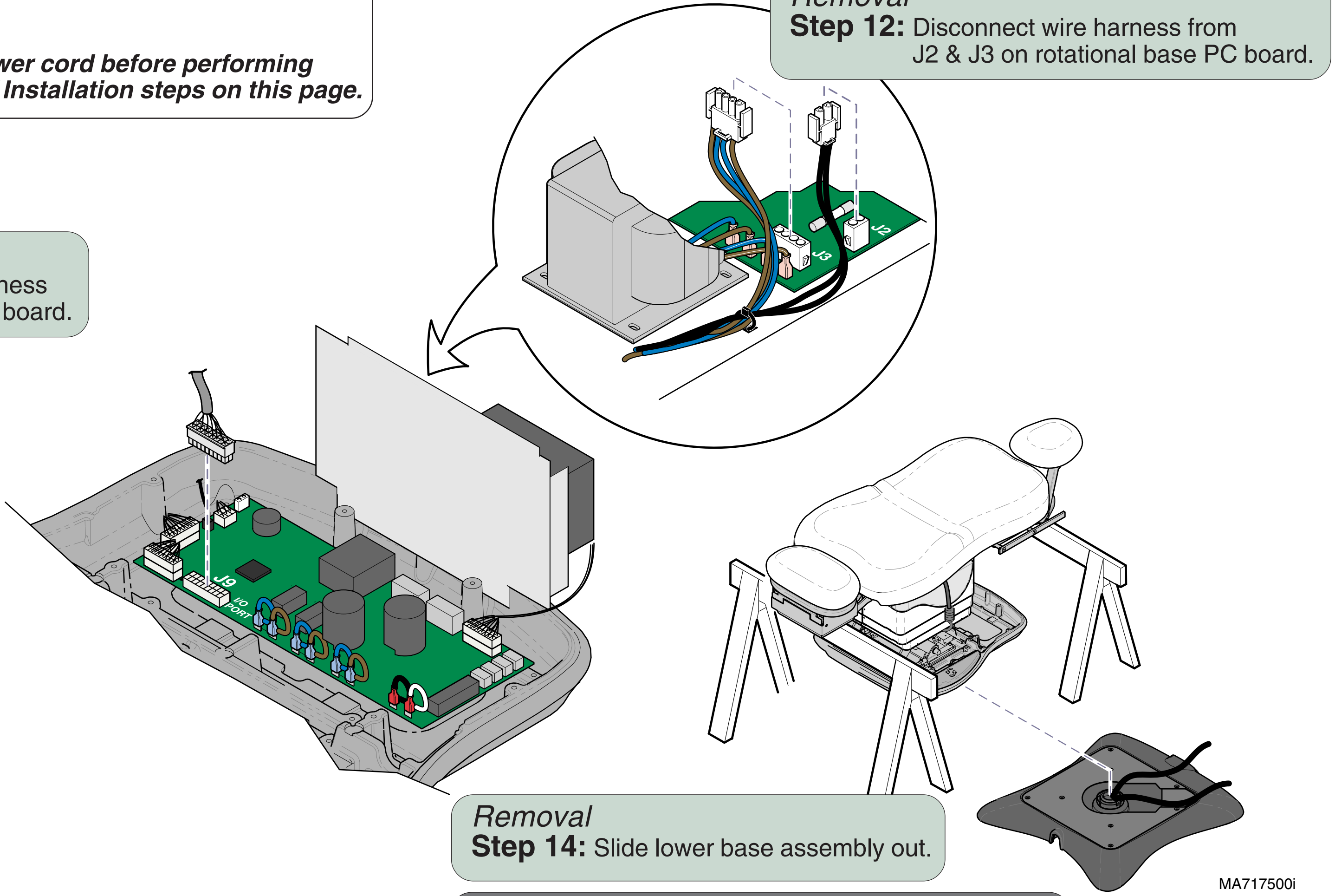
Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued

Removal & Installation

WARNING

Disconnect table power cord before performing any of the Removal / Installation steps on this page.



Removal
Step 12: Disconnect wire harness from J2 & J3 on rotational base PC board.

Removal
Step 13: Disconnect wire harness from J9 on main PC board.

Removal
Step 14: Slide lower base assembly out.

Installation
Step 1: Slide lower base assembly under table.

Note: *To ease installation, align the new lower base assembly in the same position as the old base.*

Installation
Step 2: Route wire harnesses thru upper casting. Reconnect all wire harnesses as shown.

Component Testing & Repair

***Rotational Base Brake System** - continued*

Brake Lever & Power Electro-magnet Replacement

Refer To:
Separating Upper & Lower
Base Castings B-57
Go To Page:

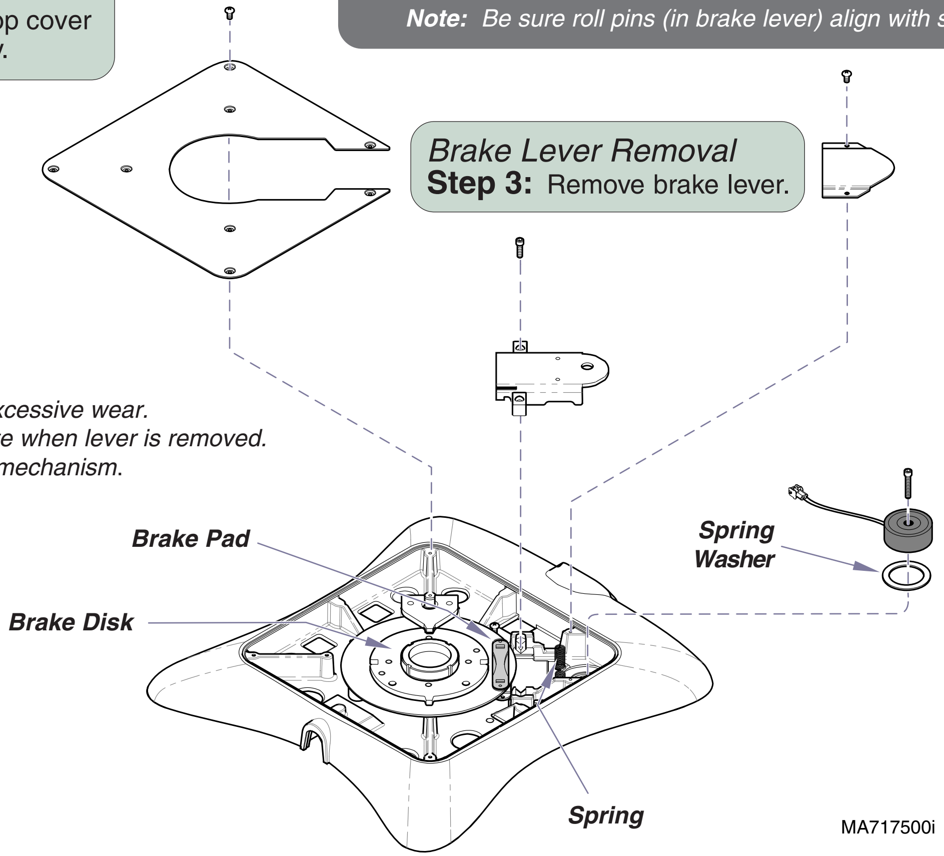
Brake Lever Removal
Step 1: Separate upper & lower base castings.
Refer to: Section B - Rot. Base Brake System.

Brake Lever Removal
Step 2: Remove corner cover & top cover from lower base assembly.

Brake Lever Installation
Step 1: Position brake lever so that it aligns w/ slots in brake pad. Secure lever with two screws.

Note: *Be sure roll pins (in brake lever) align with springs*

Brake Lever Removal
Step 3: Remove brake lever.



Attention: *Check brake pad for excessive wear.*
Brake disk should rotate when lever is removed.
Remove any debris in mechanism.

Electro-magnet Removal
Step 1: Remove brake lever.

Electro-magnet Removal
Step 2: Disconnect magnet wire harness. Remove magnet.

Electro-magnet Installation
Step 1: Connect magnet wire harness. Install magnet.

Note: *Be sure spring washer is in place under magnet.*

Models:	***230** (-003)*	***630** (-005 & -006)*
Serial Numbers:	All	All

Rotational Base Brake System - *continued*

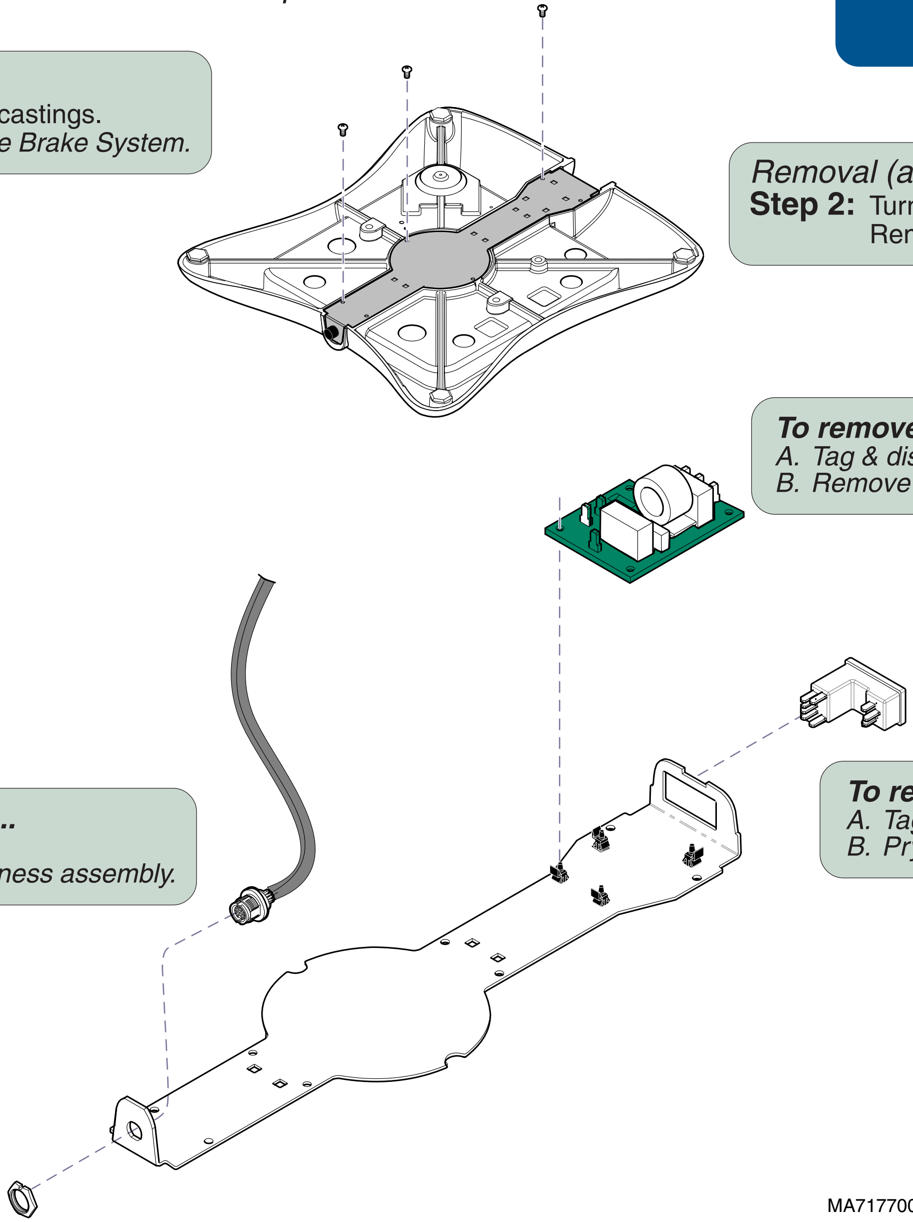
Foot Control Inlet / Power Inlet / EMI FIlter Board Replacement

Refer To:
Separating Upper & Lower
Base Castings B-57

Go To Page:

Removal (all)
Step 1: Separate upper & lower base castings.
Refer to: Section B - Rot. Base Brake System.

Removal (all)
Step 2: Turn lower base casting upside down.
Remove bottom cover.



To remove EMI filter board...
A. Tag & disconnect all wires to board.
B. Remove board from mtg. studs.

To remove foot control inlet...
A. Unscrew lock nut.
B. Remove foot control inlet / harness assembly.

To remove power inlet...
A. Tag & disconnect all wires to power inlet.
B. Pry power inlet out of bottom cover.

MA717700i

Models:	***230*** *(-003)*	***630*** *(-005 & -006)*
Serial Numbers:	All	All

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Section C

Access Procedures

Removing & Installing:

Go To Page:

PC Board Cover:
- *models w/ Standard Base* C-2
- *models w/Rotational Base* C-3

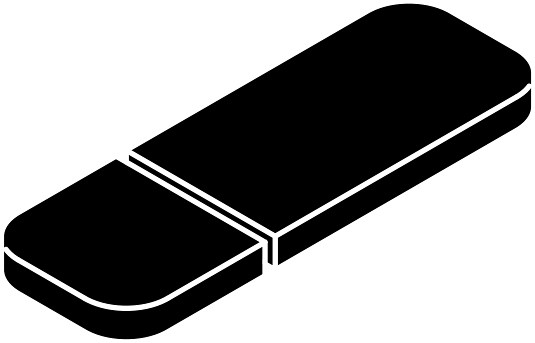
Base Shrouds:
- *Raising (w/bungee cord)* C-4
- *Removing / Installing* C-5

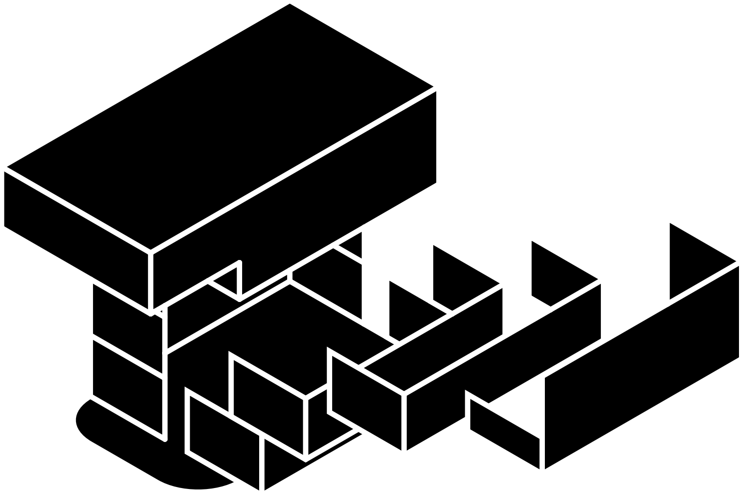
Upholstery C-6
Back Section Covers C-7
Seat Section Covers C-8

Foot Section Covers:
- *Midmark models* C-9
- *Ritter models* C-10

Junction Board Cover C-11

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitve. ex. C-2)





Access Procedures

PC Board Cover *(models w/ Standard Base)*

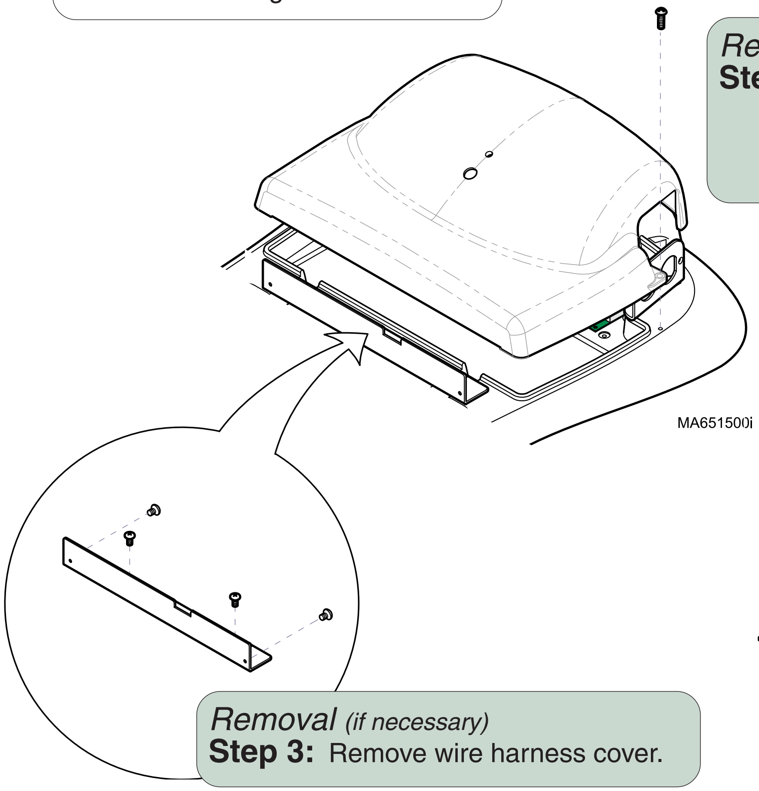
Removal / Installation

⚠ ***Caution***
Unplug power cord before removing PC Board cover.

Installation
Step 3: Position cover.
Secure with two screws.

Removal
Step 1: Remove two screw(s) and **partially** separate cover.

Note: *You must perform Step 2 before cover can be completely removed.*

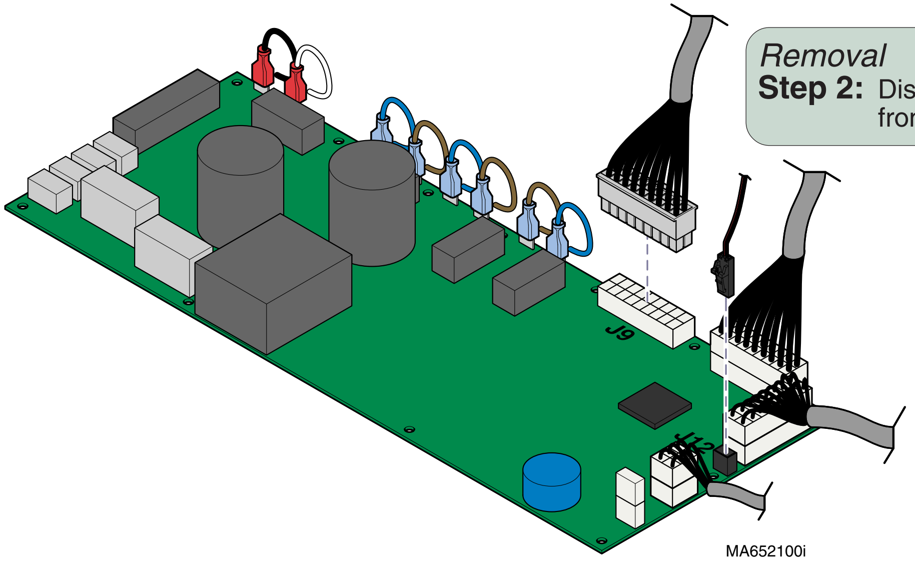


Removal (if necessary)
Step 3: Remove wire harness cover.

Installation (if necessary)
Step 1: Install wire harness cover.

Installation
Step 2: Connect wire harnesses to J9 & J12 on PC Board.

Removal
Step 2: Disconnect wire harnesses from J9 & J12 on PC Board.



Models: ***Serial Numbers:***	***230*** ***(-001/-002/-004)*** all	***630*** ***(-001 thru -004) & (-007 thru -009)*** all	***75*** ***(-019 thru -021)*** all

PC Board Cover *(models w/ Rotational Base)*

Removal / Installation

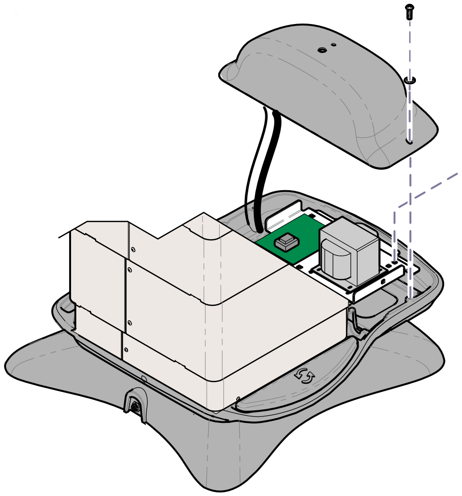
Caution
Unplug power cord before removing PC Board cover.

Removal
Step 1: Remove two screw(s) and **partially** separate cover.

Note: *You must perform Step 3 before cover can be completely removed.*

Removal
Step 2: Remove two screw(s) from transformer mtg. plate.

Installation
Step 3: Secure transformer mtg. plate.
Position cover.
Secure with two screws.

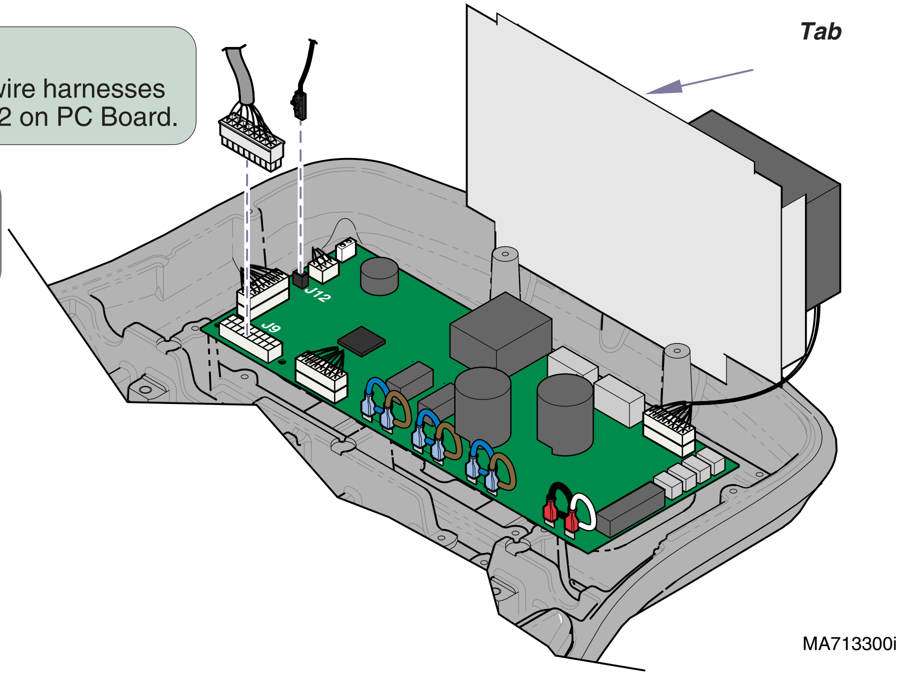


Installation
Step 2: Position transformer mtg.plate so that tab is engaged.

Removal
Step 3: Pull transformer mtg. plate out to disengage tab.
Prop mtg. plate up behind two standoffs as shown.

Removal
Step 4: Disconnect wire harnesses from J9 & J12 on PC Board.

Installation
Step 1: Connect wire harnesses to J9 & J12 on PC Board.

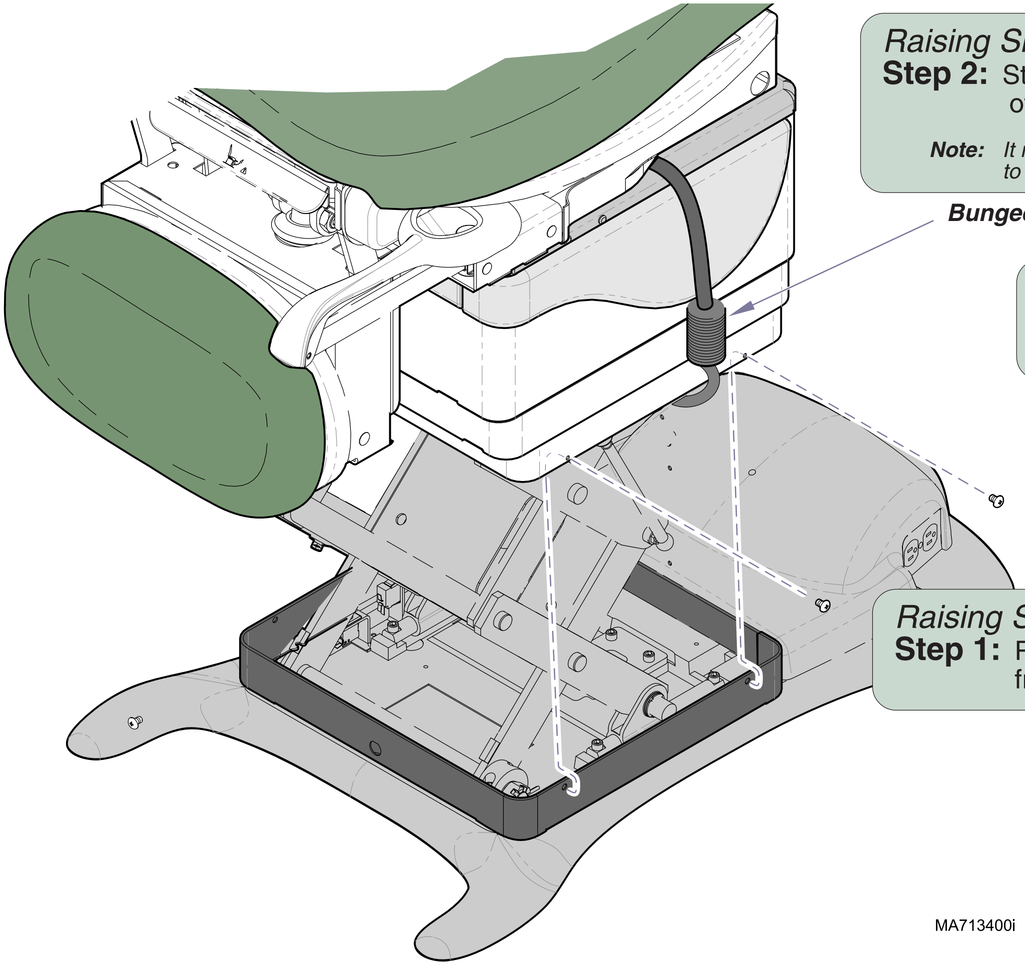


Models:	*230* (-003)	*630* (-005 & -006)
Serial Numbers:	all	all

Access Procedures

Base Shrouds

Raising (w/ bungee cord)



Raising Shrouds
Step 2: Stretch bungee cord across top of base column *(under seat).*

Note: *It may be necessary to run Tilt UP function to route bungee cord under seat section.*

Raising Shrouds
Step 3: Lift shrouds, then attach bungee cord hooks under shrouds on both sides.

Raising Shrouds
Step 1: Remove bottom screws from inner shrouds.

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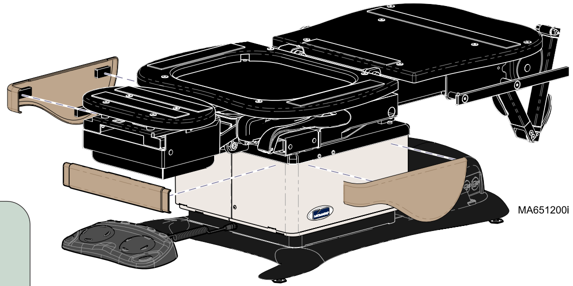
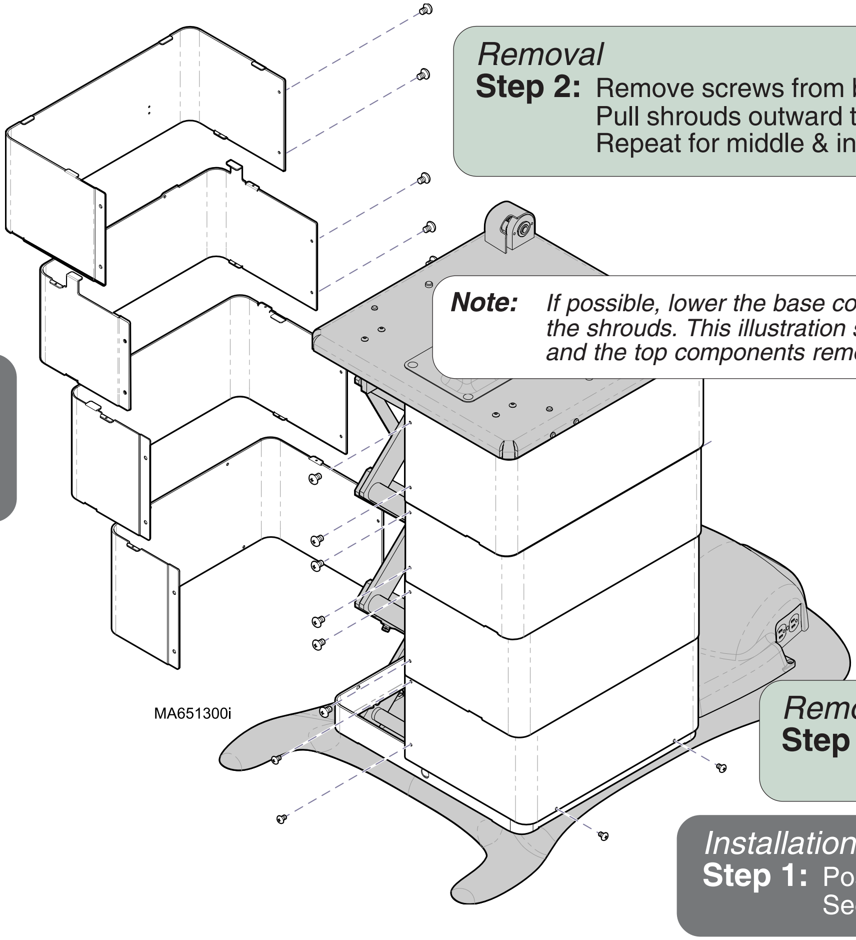
Base Shrouds *- continued*

Removal / Installation



Installation
Midmark models only
Step 4: Install magnetic covers.

Removal
Midmark models only
Step 1: Remove magnetic covers.



Removal
Step 2: Remove screws from both ends of outer shrouds.
Pull shrouds outward to disengage tabs.
Repeat for middle & inner shrouds

Note: *If possible, lower the base completely before removing the shrouds. This illustration shows the base raised, and the top components removed for clarity only.*

Installation
Step 3: Position outer shrouds.
Secure with screws at both ends.

Note: *Insert shroud tabs into seat weldment slots.*

Installation
Step 2: Position middle shrouds.
Secure with screws at both ends.

Note: *Be sure shroud tabs stack on top of each other.*

Removal
Step 3: Remove bottom screws from inner shrouds.

Installation
Step 1: Position inner shrouds.
Secure with screws at both ends and bottom.

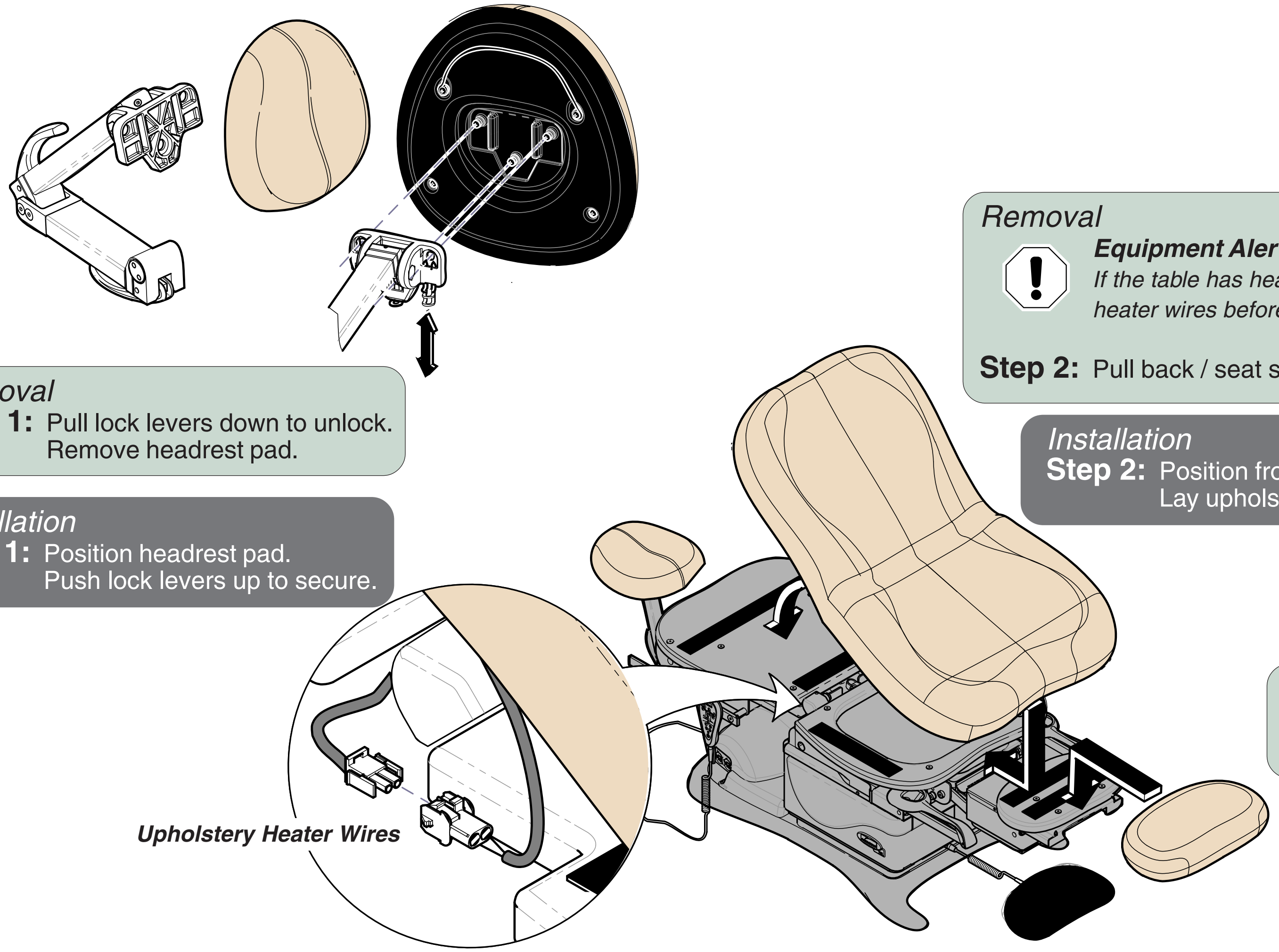
Models: ***ALL***
Serial Numbers:

Access Procedures

Upholstery

Removal / Installation

NOTE: *Midmark upholstery is shown. The procedure for Ritter upholstery is similar.*



Removal
Step 1: Pull lock levers down to unlock.
Remove headrest pad.

Installation
Step 1: Position headrest pad.
Push lock levers up to secure.

Removal

Equipment Alert

If the table has heated upholstery, you must disconnect heater wires before removing the seat / back section.

Step 2: Pull back / seat section up to release velcro.

Installation
Step 2: Position front of seat section against mounting board.
Lay upholstery flat, then press down firmly.

Removal
Step 3: Pull foot section pad
up to release velcro.

Installation
Step 3: Align velcro strips.
Press down firmly.

MA651101i

Back Section Covers

Removal / Installation

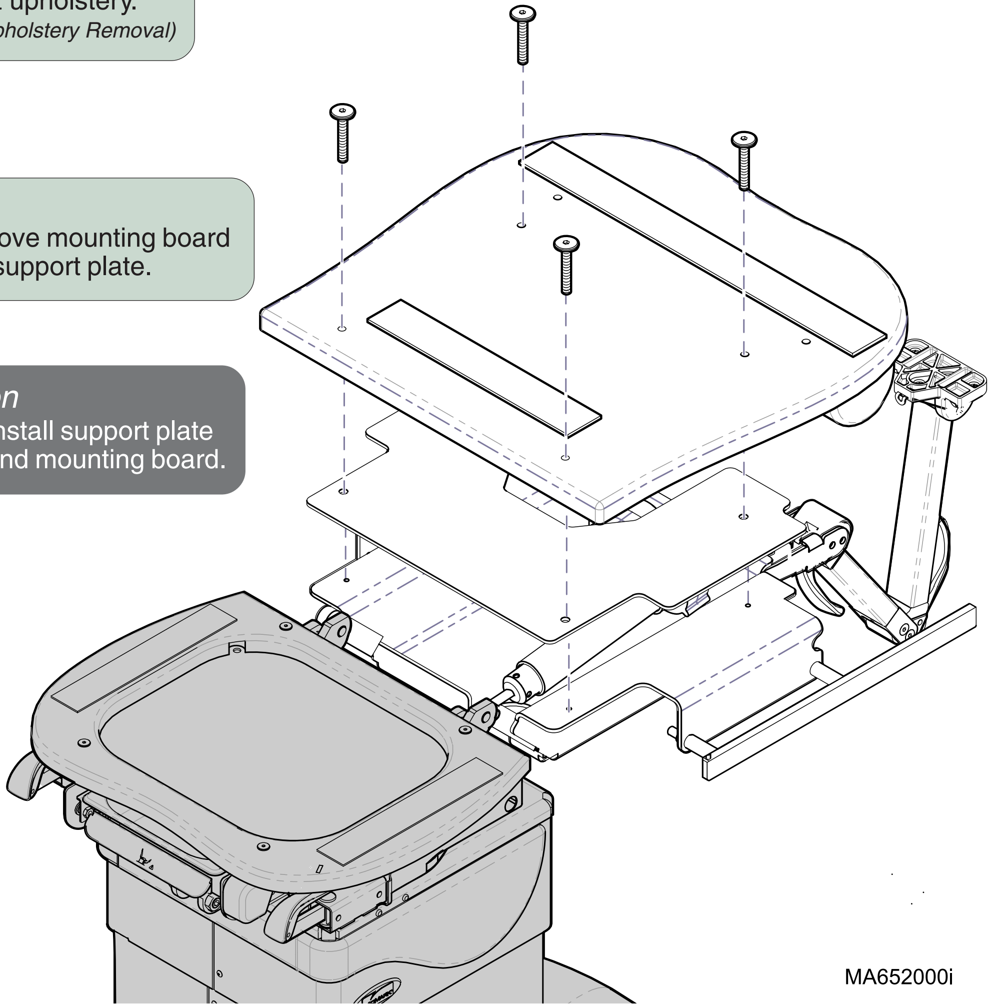
Refer To: **Go To Page:**
Upholstery Removal / Installation C-6

NOTE: *Midmark table is shown. The procedure for Ritter tables is similar.*

Removal
Step 1: Remove back / seat upholstery.
(Refer to: Section C - Upholstery Removal)

Removal
Step 2: Remove mounting board and support plate.

Installation
Step 1: Install support plate and mounting board.



MA652000i

Access Procedures

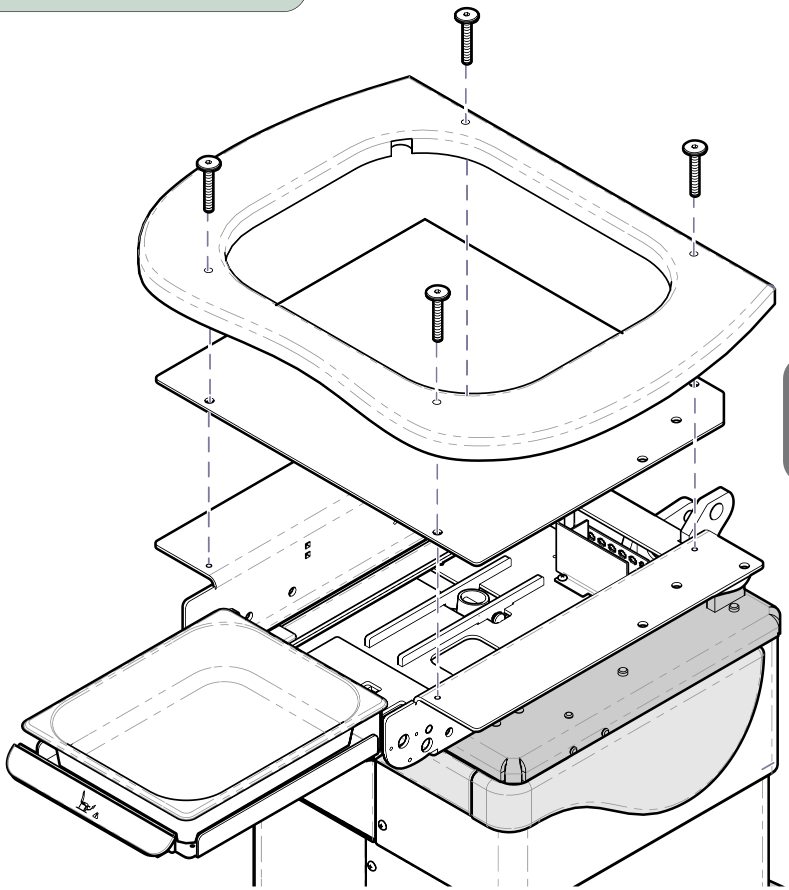
Seat Section Covers

Removal / Installation

Refer To: **Go To Page:**
Upholstery Removal / Installation C-6

NOTE: *Midmark table is shown. The procedure for Ritter tables is similar.*

Removal
Step 1: Remove back / seat upholstery.
(Refer to: Section C - Upholstery Removal)



Removal
Step 2: Remove mounting board and support plate.

Installation
Step 1: Install support plate and mounting board.

MA651400i

Models: ***ALL***
Serial Numbers:

Foot Section Covers - Midmark Models

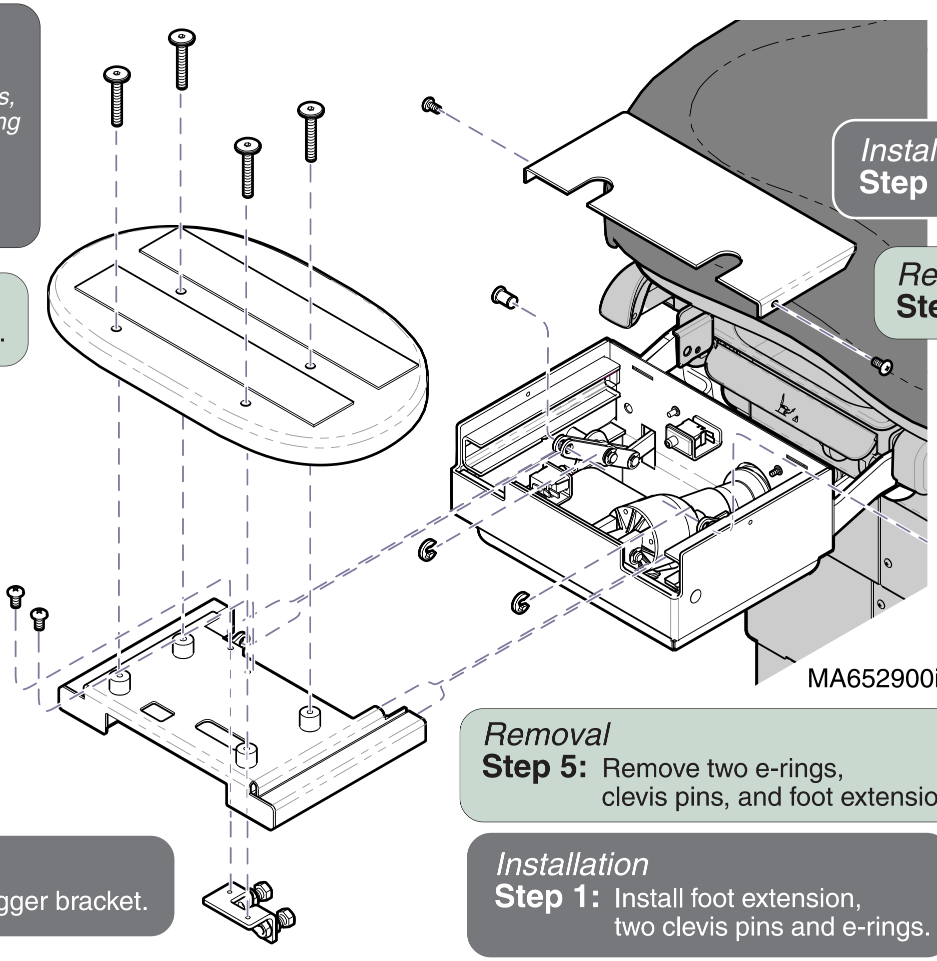
Removal / Installation

Refer To: **Go To Page:**
Upholstery Removal / Installation C-6

Removal
Step 1: Remove foot upholstery.
(Refer to: Section C - Upholstery Removal)

Removal
Equipment Alert
If the mounting board is installed backwards, it may collide with the floor. Be sure mounting board is oriented as shown.
Step 4: Install mounting board.

Removal
Step 2: Remove mounting board.



Installation
Step 3: Install foot cover.

Removal
Step 3: Remove foot cover .

Removal
Step 4: Remove two screws and switch trigger bracket.

Removal
Step 5: Remove two e-rings, clevis pins, and foot extension.

Installation
Step 2: Install switch trigger bracket.

Installation
Step 1: Install foot extension, two clevis pins and e-rings.

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	V1000 thru Present	V1000 thru Present

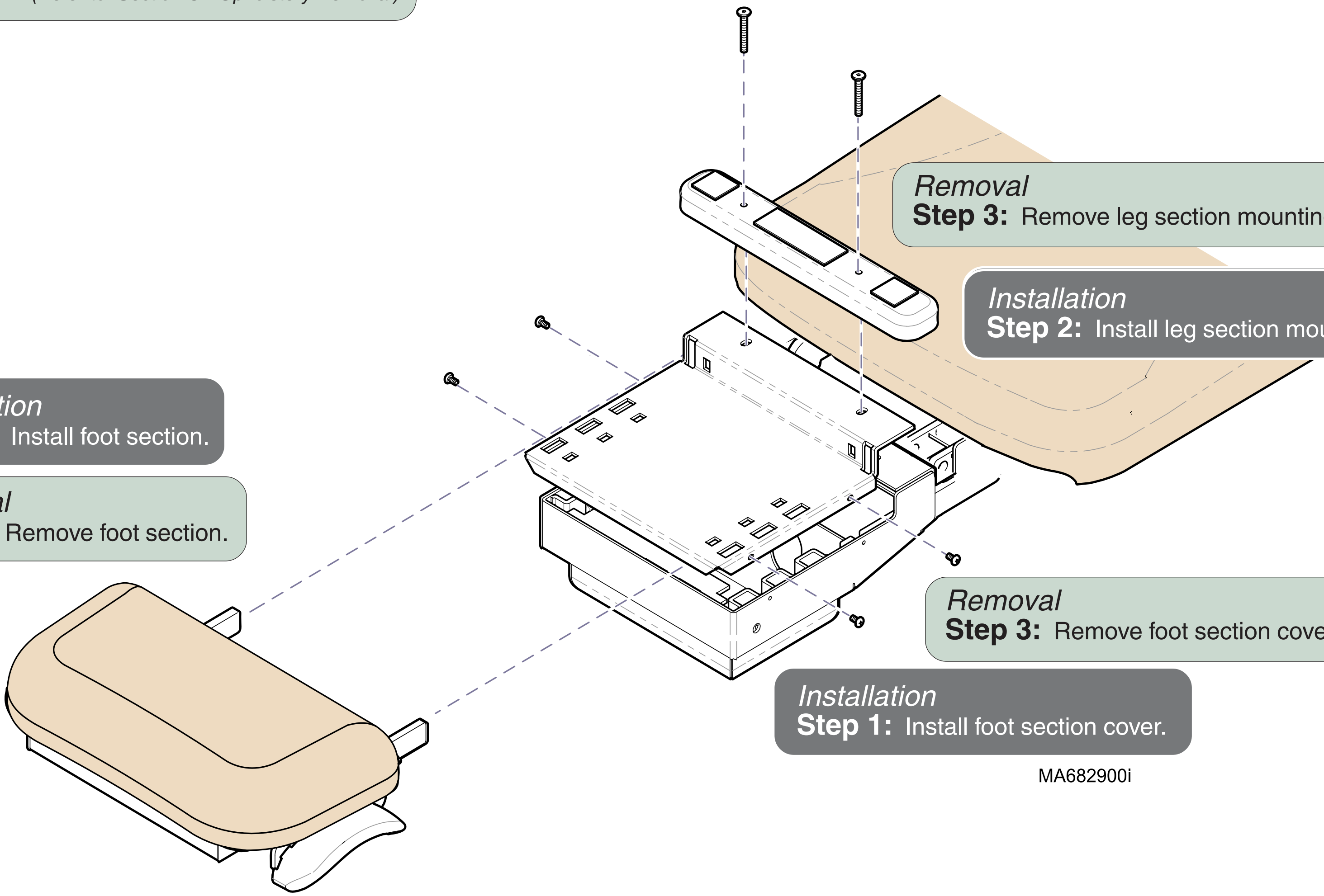
Back
Go To Table Of Contents
Next

Foot Section Covers - ***Ritter Models***

Removal / Installation

Refer To:
Go To Page:
Upholstery Removal / Installation C-6

Removal
Step 1: Remove leg section upholstery.
(Refer to: Section C - Upholstery Removal)



Removal
Step 3: Remove leg section mounting board.

Installation
Step 2: Install leg section mounting board.

Installation
Step 3: Install foot section.

Removal
Step 2: Remove foot section.

Removal
Step 3: Remove foot section cover.

Installation
Step 1: Install foot section cover.

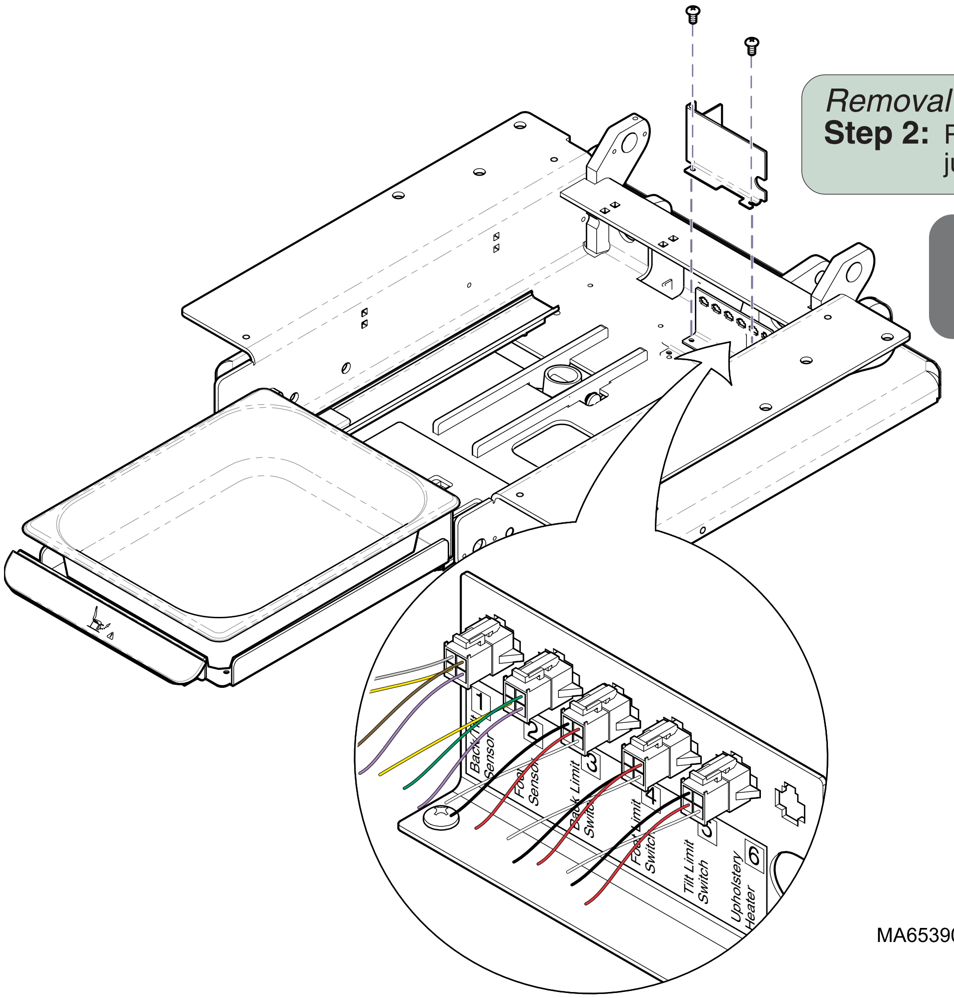
Models:	***230*** ***(all)***	***75*** ***(-019)***
Serial Numbers:	V1000 thru Present	V1000 thru Present

Junction Board Cover

Removal / Installation

Refer To: **Go To Page:**
Seat Section Covers C-8

Removal
Step 1: Remove seat section covers.
(Refer to: Section C - Seat Section Covers)


1
Sensor
2
Sensor
Back Limit
Switch
3
4
Limit
Switch
5
Tilt Limit
Switch
Upholstery
Heater
6

Removal
Step 2: Remove two screws and junction board cover.

Installation
Step 1: Position cover and secure with two screws.

MA653900i

Models: *ALL*
Serial Numbers:

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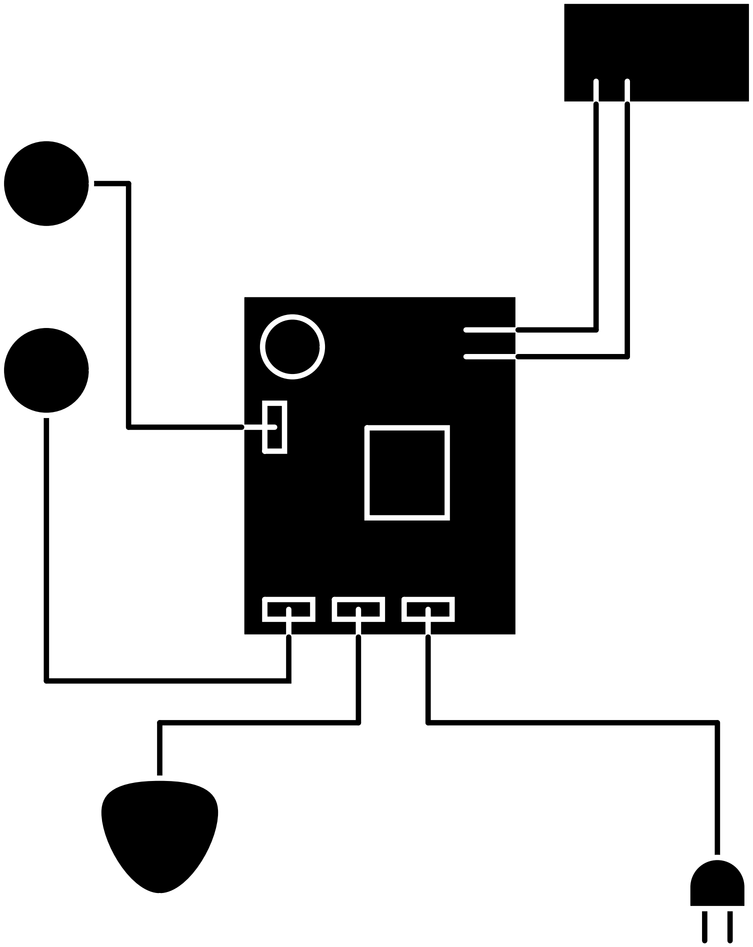
Section D

Wiring Diagrams

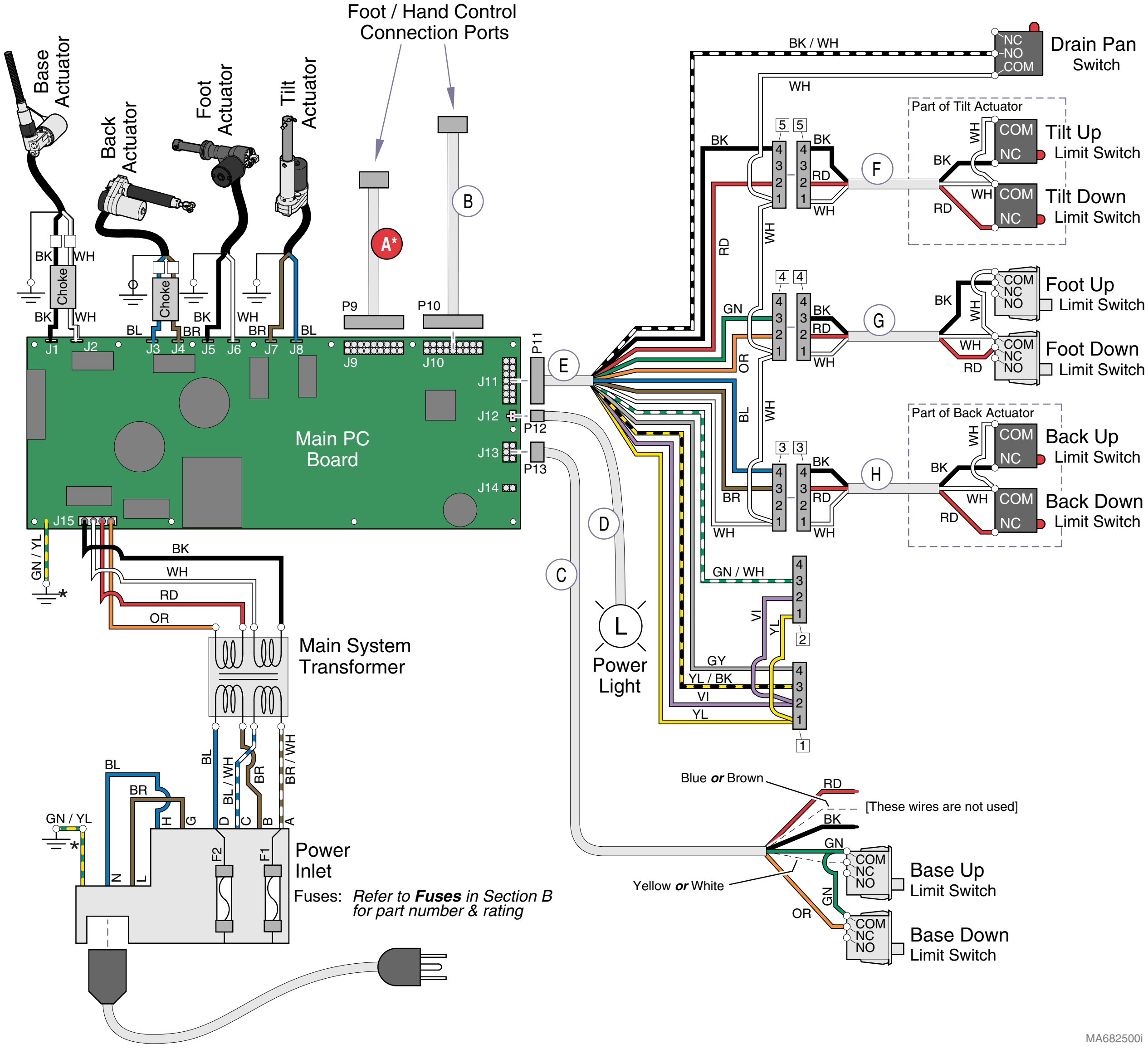


Model
Go To Page:
230:
(-001 & -004) D-2
(-002) D-3
(-003) D-4
630:
(-001 & -002) D-5*
(-003 / -004 / -008 / -009) D-6*
(-005 & -006) D-7
(-007) D-8
75:
(-019) D-2
(-020 & -021) D-6*

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitve. ex. D-2)

Wiring Diagrams

Refer To: **Go To Page:**
Primary Fuses B-2


Foot / Hand Control Connection Ports
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
A*
B
P9
P10
BK
WH
Choke
BL
BR
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
Main PC Board
E
D
C
L
Power Light
GN / YL
RD
OR
Main System Transformer
BL / WH
BR / WH
H
G
D
C
B
A
F2
F1
N
L
Power Inlet
Fuses: *Refer to Fuses in Section B for part number & rating*
Drain Pan Switch
BK / WH
NC
NO
COM
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
F
Foot Up Limit Switch
Foot Down Limit Switch
G
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
GN
GN / WH
GY
YL / BK
VI
YL
Blue *or* Brown
Yellow *or* White
[These wires are not used]
Base Up Limit Switch
Base Down Limit Switch
MA682500i

* Ground Wire p/n: 015-1774-03

Item	Harness Description *(sensors & switches not included)*	Part Number
A*	Connection Port Harness *[short - head end]* ** [Serial Numbers: V370644 thru present]*	002-1110-00
B	Connection Port Harness *[long - foot end]*	002-1110-01
C	Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness *[includes green light]*	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	n/a *(part of Tilt actuator)*
G	Foot Limit Switch Harness	015-1857-00
H	Back Limit Switch Harness	n/a *(part of Back actuator)*

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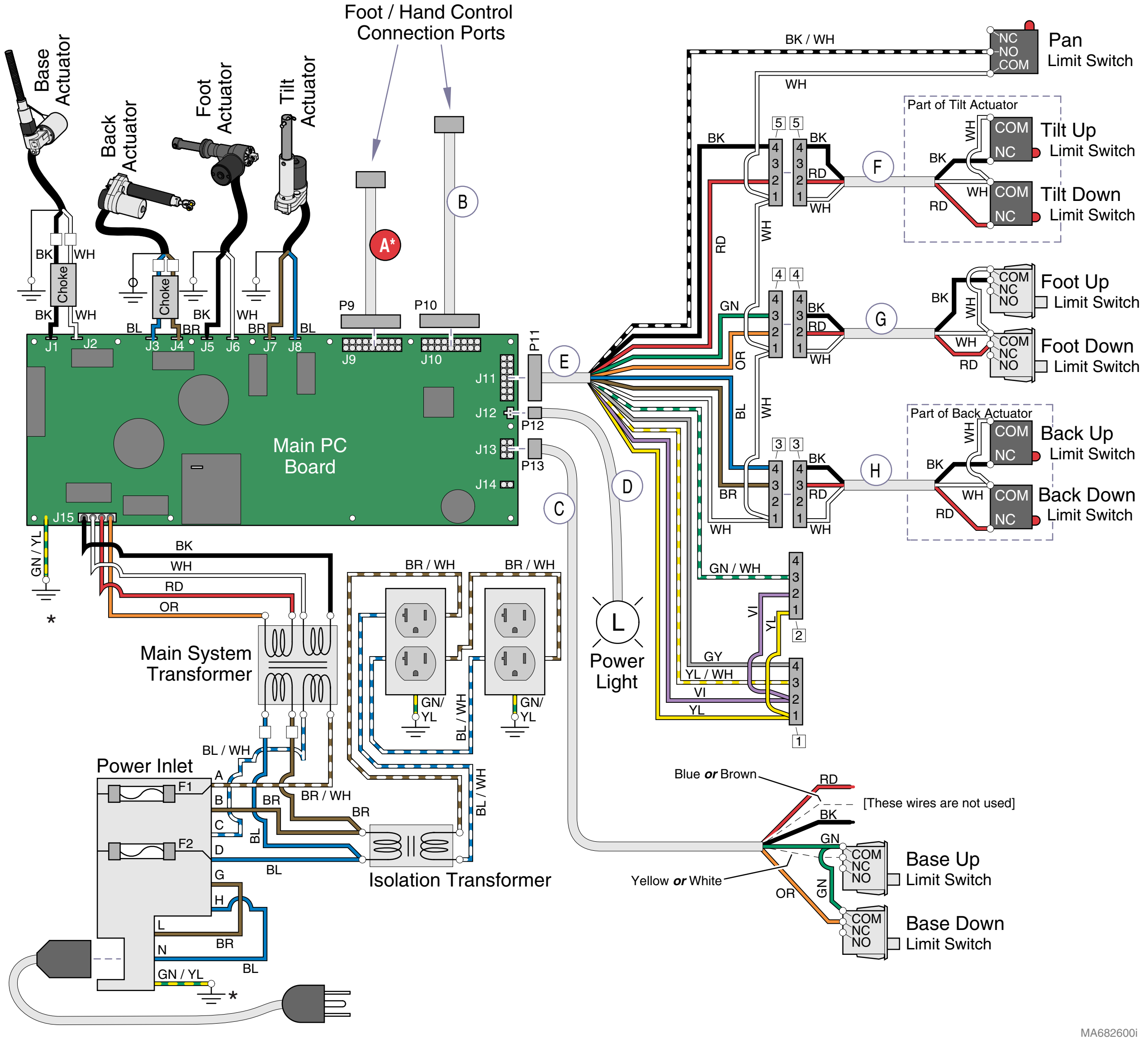
Next

Wiring Diagrams

Refer To: **Go To Page:**

Primary Fuses B-2


Foot / Hand Control
Connection Ports
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
BK
WH
Choke
BK
WH
BK
WH
BL
BR
BR
BL
BR
BL
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
P9
P10
A*
B
P11
E
J11
J12
P12
J13
P13
J14
J15
Main PC Board
C
D
GN / YL
*
BK
WH
RD
OR
Main System Transformer
BR / WH
BR / WH
GN/ YL
GN/ YL
BL / WH
L
Power Light
BL / WH
Power Inlet
A
F1
B
BR
BR / WH
BR
C
D
F2
BL
BL
G
H
L
N
BR
BL
GN / YL
*
BL / WH
Isolation Transformer
BK / WH
NC
NO
COM
Pan Limit Switch
WH
Part of Tilt Actuator
WH
COM
Tilt Up Limit Switch
NC
BK
5
5
BK
BK
4 3 2 1
4 3 2 1
RD
WH
F
WH
COM
Tilt Down Limit Switch
RD
NC
RD
WH
4
4
GN
BK
RD
WH
G
COM
NC
NO
Foot Up Limit Switch
BK
WH
WH
COM
NC
NO
Foot Down Limit Switch
RD
OR
BL
WH
Part of Back Actuator
WH
COM
Back Up Limit Switch
NC
BK
3
3
BK
BR
RD
WH
WH
H
WH
COM
Back Down Limit Switch
RD
NC
GN / WH
4 3 2 1
VI
YL
2
GY
YL / WH
VI
YL
4 3 2 1
1
Blue or Brown
RD
[These wires are not used]
BK
GN
COM
NC
NO
Base Up Limit Switch
Yellow or White
OR
GN
COM
NC
NO
Base Down Limit Switch
MA682600i

* Ground Wire p/n: 015-1774-03

Item	Harness Description *(sensors & switches not included)*	Part Number
A*	Connection Port Harness *[short - head end]* ** **[Serial Numbers: V370644 thru present]*****	002-1110-00
B	Connection Port Harness *[long - foot end]*	002-1110-01
C	Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness *[includes green light]*	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	n/a *(part of Tilt actuator)*
G	Foot Limit Switch Harness	015-1857-00
H	Back Limit Switch Harness	n/a *(part of Back actuator)*

Models: 230 (-002)

Serial Numbers: All

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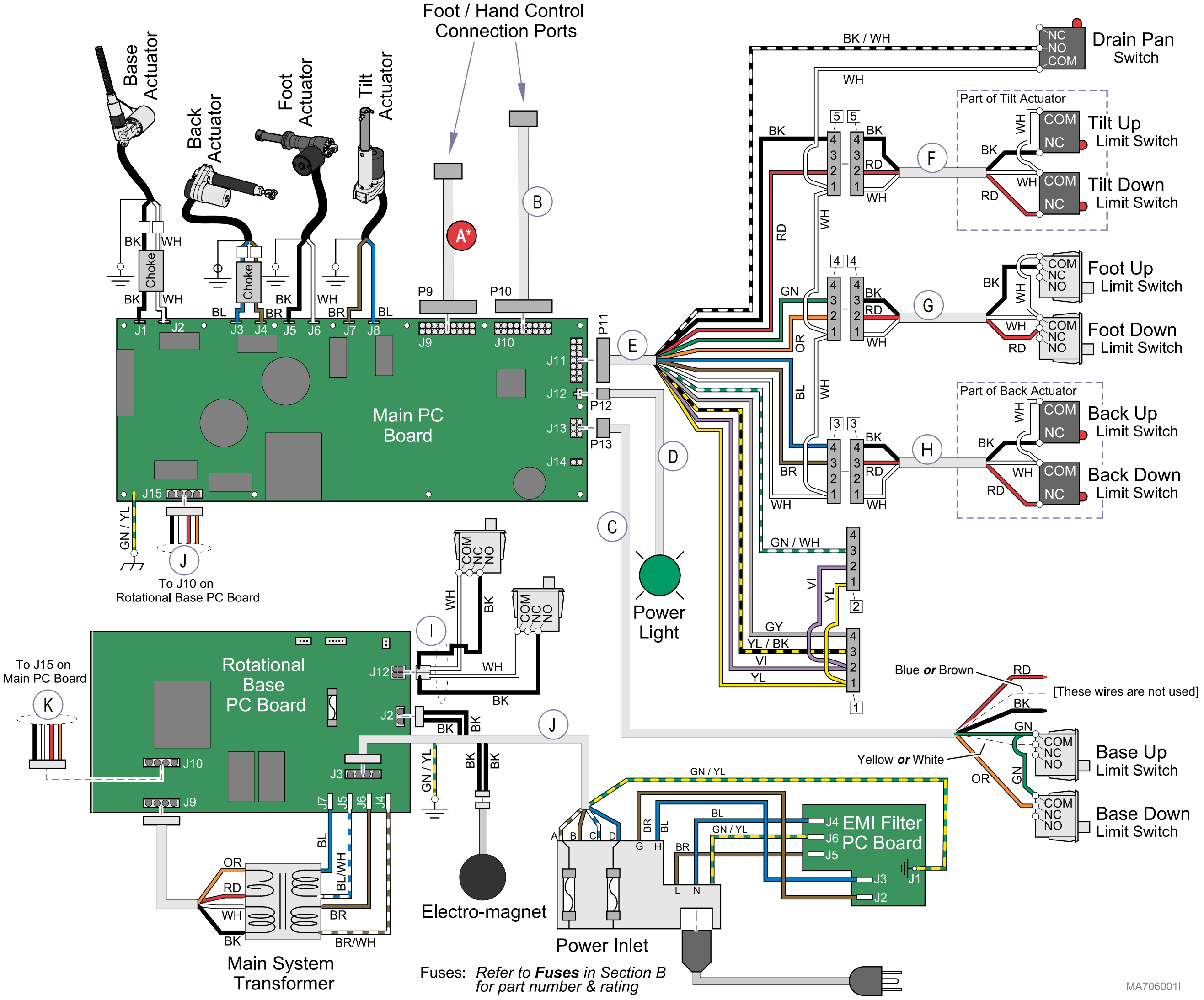
Wiring Diagrams

Refer To: **Go To Page:**

Primary Fuses B-2

Item	**Harness Description** *(sensors & switches not included)*	Part Number
A*	Connection Port Harness *[short - head end]* *** [Serial Numbers: V370644 thru present]***	**002-1110-02**
B	Connection Port Harness *[long - foot end]*	**002-1110-03**
C	Limit Switch Harness - BASE	**015-1821-00**
D	Power Light Harness *[includes green light]*	**015-1793-01**
E	'PC Board to Junction Board' Harness	**015-1937-00**
F	Tilt Limit Switch Harness	**n/a** *(part of Tilt actuator)*
G	Foot Limit Switch Harness	**015-1857-00**
H	Back Limit Switch Harness	**n/a** *(part of Back actuator)*
I	Brake Switch Harness	**015-1967-00**
J	Rotational Base PC Board to Power Inlet	**015-1966-00**
K	Rotational Base PC Board to Main PC Board	**015-1968-00**


Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
Foot / Hand Control Connection Ports
Drain Pan Switch
NC
NO
COM
BK / WH
WH
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
COM
NC
BK
RD
WH
F
5
4
3
2
1
Foot Up Limit Switch
Foot Down Limit Switch
G
GN
OR
BL
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
BR
GN / WH
GY
YL / BK
VI
YL
Blue or Brown
RD
[These wires are not used]
Yellow or White
OR
Base Up Limit Switch
Base Down Limit Switch
Choke
BK
WH
BL
BR
A*
B
P9
P10
P11
P12
P13
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
Main PC Board
E
D
C
Power Light
GN / YL
J
To J10 on Rotational Base PC Board
To J15 on Main PC Board
K
Rotational Base PC Board
I
COM
NC
NO
Electro-magnet
Main System Transformer
OR
RD
WH
BK
BR
BR/WH
BL/WH
EMI Filter PC Board
J4
J6
J5
J3
J2
J1
GN / YL
A
B
C
D
G
H
L
N
Power Inlet
Fuses: Refer to Fuses in Section B for part number & rating
MA706001i

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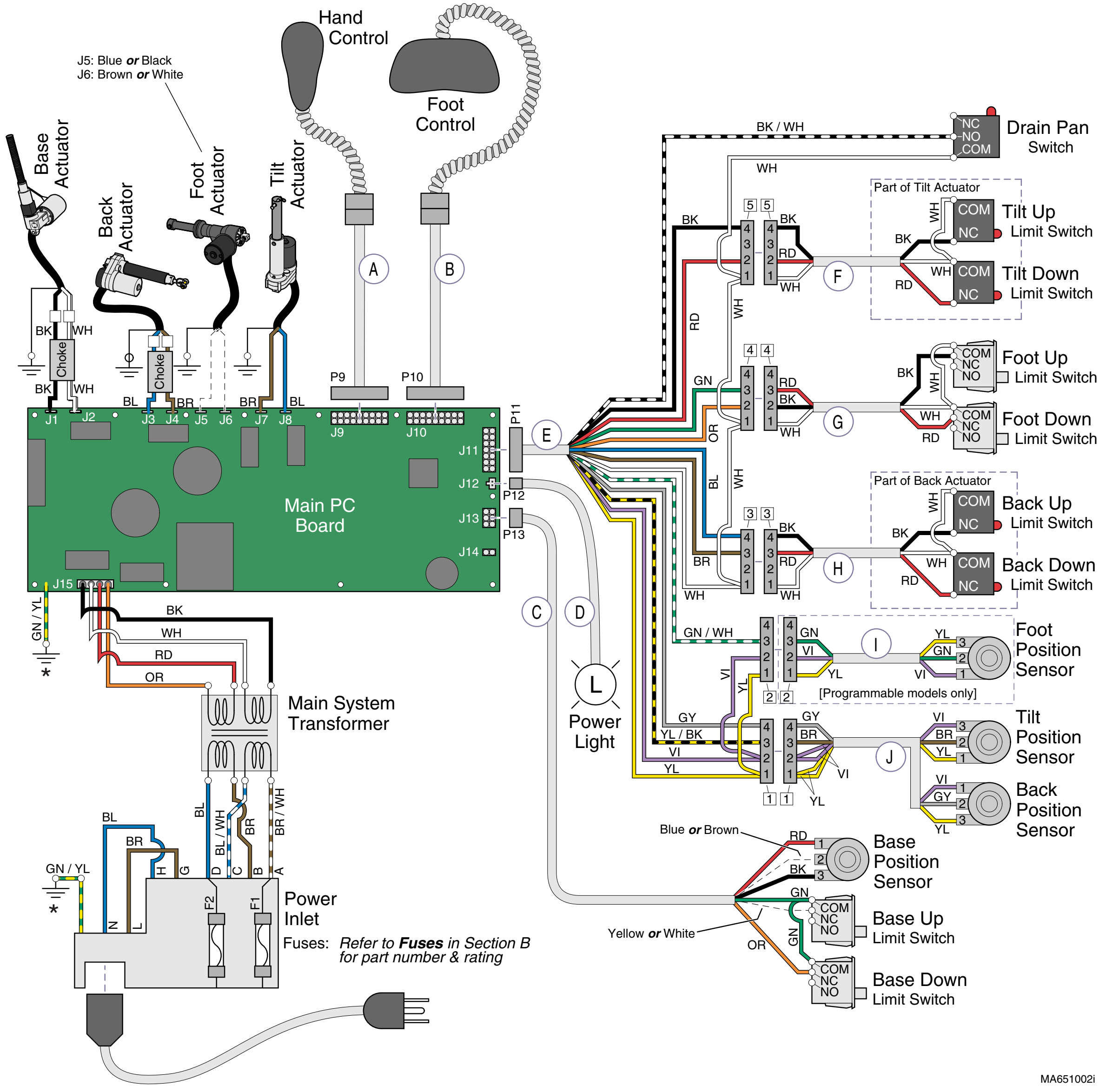
Wiring Diagrams

Refer To: **Go To Page:**

Primary Fuses B-2


J5: Blue *or* Black
J6: Brown *or* White
Hand Control
Foot Control
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
A
B
BK
WH
Choke
BK
WH
Choke
BR
BR
BL
P9
P10
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
P11
J11
J12
P12
J13
P13
J14
J15
Main PC Board
E
BK / WH
Drain Pan Switch
NC
NO
COM
WH
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
COM
NC
F
RD
BK
Foot Up Limit Switch
Foot Down Limit Switch
G
GN
OR
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
BL
GN / WH
Foot Position Sensor
I
[Programmable models only]
VI
YL
GY
YL / BK
Tilt Position Sensor
J
Back Position Sensor
C
D
L
Power Light
BK
WH
RD
OR
GN / YL
Main System Transformer
BL
BR
BL / WH
BR / WH
GN / YL
Power Inlet
F2
F1
Fuses: *Refer to **Fuses** in Section B for part number & rating*
Blue *or* Brown
Base Position Sensor
Base Up Limit Switch
Yellow *or* White
Base Down Limit Switch
MA651002i

* Ground Wire p/n: 015-1774-03

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	**002-1110-00**
B	Connection Port Harness *[long - foot end]*	**002-1110-01**
C	Position Sensor / Limit Switch Harness - BASE	**015-1821-00**
D	Power Light Harness *[includes green light]*	**015-1793-00**
E	'PC Board to Junction Board' Harness	**015-1746-00**
F	Tilt Limit Switch Harness	**n/a** *(part of Tilt actuator)*
G	Foot Limit Switch Harness	**015-1731-00**
H	Back Limit Switch Harness	**n/a** *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	**015-1773-00** *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	**015-1761-00** *(incl. both sensors)*

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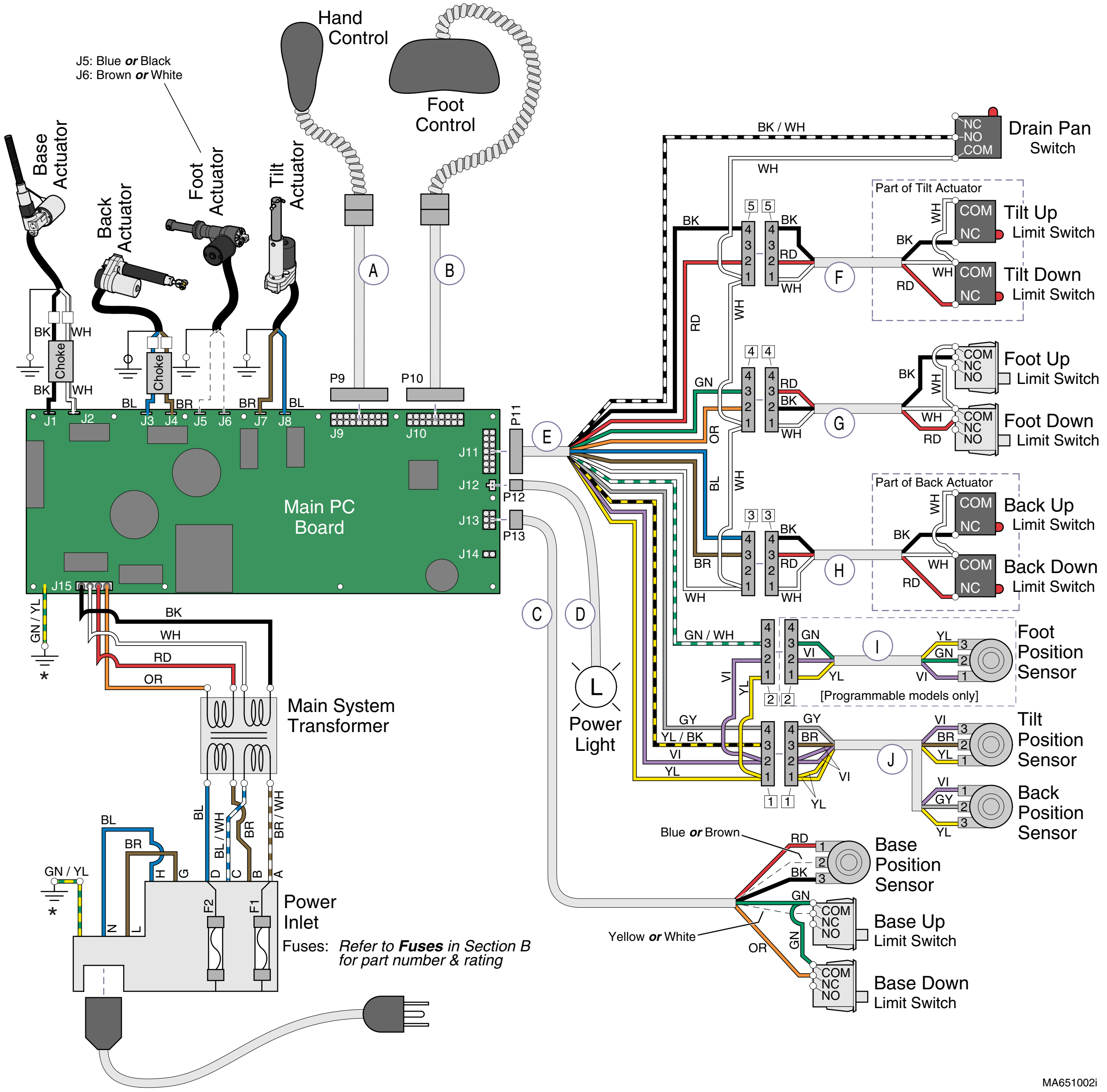
Wiring Diagrams

Refer To: Go To Page:
Primary Fuses B-2

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	002-1110-00
B	Connection Port Harness *[long - foot end]*	002-1110-01
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness *[includes green light]*	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	n/a *(part of Tilt actuator)*
G	Foot Limit Switch Harness	015-1731-00
H	Back Limit Switch Harness	n/a *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	015-1773-00 *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	015-1761-00 *(incl. both sensors)*


Hand Control
Foot Control
J5: Blue *or* Black
J6: Brown *or* White
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
A
B
P9
P10
BK
WH
Choke
BL
BR
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
E
Main PC Board
GN / YL
*
C
D
L
Power Light
Main System Transformer
RD
OR
BR / WH
BL / WH
H
G
D
C
B
A
F2
F1
N
L
Power Inlet
Fuses: *Refer to **Fuses** in Section B for part number & rating*
BK / WH
Drain Pan Switch
NC
NO
COM
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
F
Foot Up Limit Switch
Foot Down Limit Switch
G
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
GN / WH
GN
VI
YL
I
Foot Position Sensor
[Programmable models only]
GY
YL / BK
J
Tilt Position Sensor
Back Position Sensor
Blue *or* Brown
Base Position Sensor
Yellow *or* White
Base Up Limit Switch
Base Down Limit Switch
MA651002i

* Ground Wire p/n: 015-1774-03

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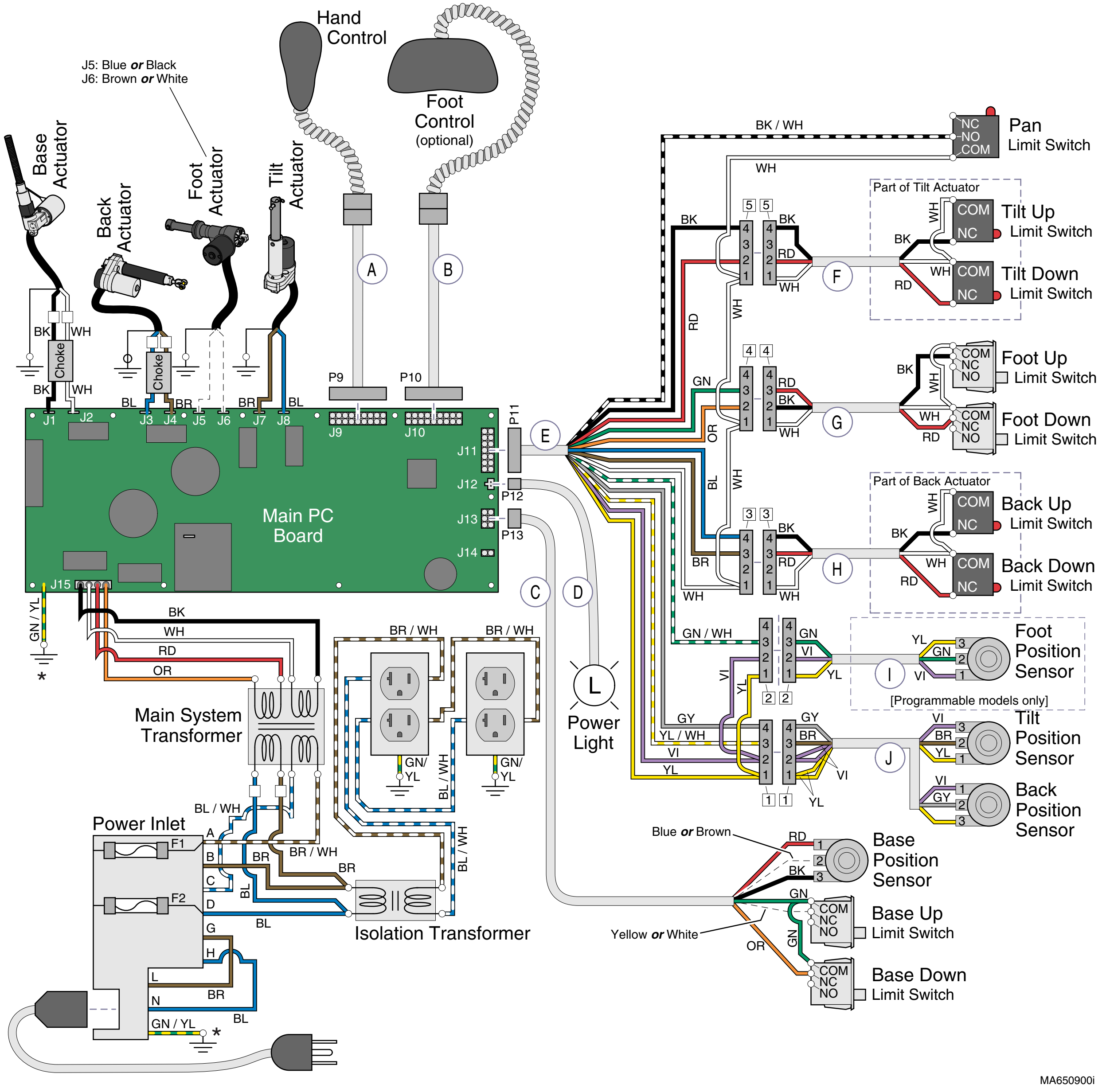
Wiring Diagrams

Refer To: **Go To Page:**
Primary Fuses B-2


Hand Control
Foot Control
(optional)
J5: Blue or Black
J6: Brown or White
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
A
B
P9
P10
BK
WH
Choke
BL
BR
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
Main PC Board
E
C
D
GN / YL
OR
RD
Main System Transformer
BR / WH
GN/ YL
BL / WH
L
Power Light
Power Inlet
F1
F2
A
B
C
D
G
H
L
N
Isolation Transformer
BK / WH
Pan Limit Switch
NC
NO
COM
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
F
Foot Up Limit Switch
Foot Down Limit Switch
G
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
GN
VI
YL
GY
YL / WH
GN / WH
Foot Position Sensor
I
[Programmable models only]
Tilt Position Sensor
J
Back Position Sensor
Blue or Brown
Base Position Sensor
Base Up Limit Switch
Base Down Limit Switch
Yellow or White
MA650900i

* Ground Wire p/n: 015-1774-03

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	**002-1110-00**
B	Connection Port Harness *[long - foot end]*	**002-1110-01**
C	Position Sensor / Limit Switch Harness - BASE	**015-1821-00**
D	Power Light Harness *[includes green light]*	**015-1793-00**
E	'PC Board to Junction Board' Harness	**015-1746-00**
F	Tilt Limit Switch Harness	**n/a** *(part of Tilt actuator)*
G	Foot Limit Switch Harness	**015-1731-00**
H	Back Limit Switch Harness	**n/a** *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	**015-1773-00** *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	**015-1761-00** *(incl. both sensors)*

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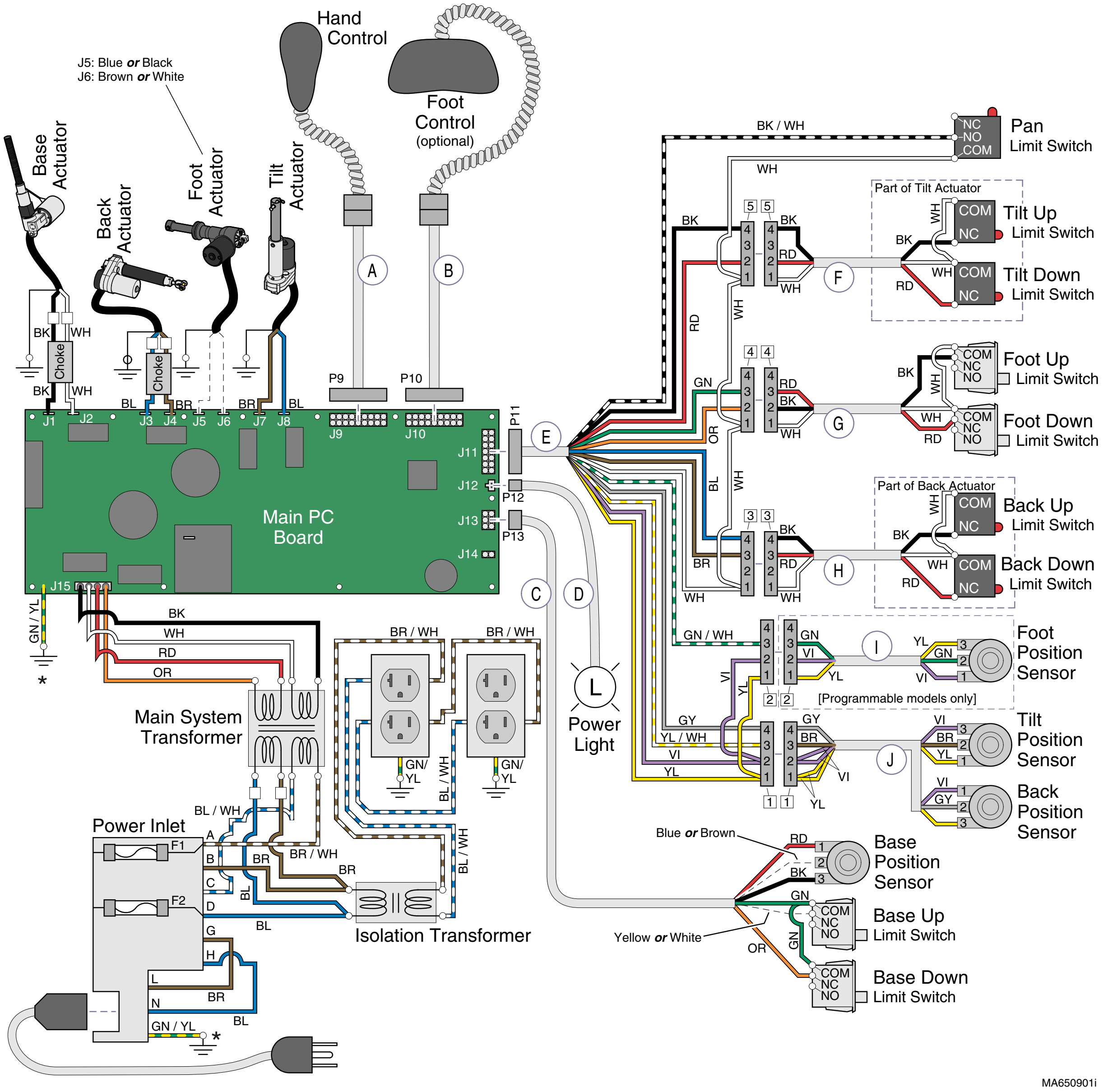
Wiring Diagrams

Refer To: **Go To Page:**

Primary Fuses B-2


Hand Control
Foot Control (optional)
J5: Blue *or* Black
J6: Brown *or* White
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
Choke
BK
WH
BL
BR
J1
J2
J3
J4
J5
J6
J7
J8
P9
P10
J9
J10
J11
J12
J13
J14
J15
P11
P12
P13
A
B
C
D
E
F
G
H
I
J
L
Main PC Board
GN / YL
BK
WH
RD
OR
Main System Transformer
Power Inlet
F1
F2
BL / WH
BR / WH
GN / YL
Isolation Transformer
Power Light
BK / WH
Pan Limit Switch
NC
NO
COM
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
Foot Up Limit Switch
Foot Down Limit Switch
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
GN / WH
YL
GN
VI
GY
YL / WH
Foot Position Sensor
[Programmable models only]
Tilt Position Sensor
Back Position Sensor
Blue *or* Brown
Base Position Sensor
Yellow *or* White
Base Up Limit Switch
Base Down Limit Switch
MA650901i

* Ground Wire p/n: 015-1774-03

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	002-1110-00
B	Connection Port Harness *[long - foot end]*	002-1110-01
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness *[includes green light]*	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	n/a *(part of Tilt actuator)*
G	Foot Limit Switch Harness	015-1731-00
H	Back Limit Switch Harness	n/a *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	015-1773-00 *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	015-1761-00 *(incl. both sensors)*

Models:	*Non-Programmable*	*Programmable*	*Non-Programmable*	*Programmable*
Serial Numbers:	***630** (-003 & -008)* V77351 thru Present	***630** (-004 & -009)* V77351 thru Present	***75** (-020)* V77351 thru Present	***75** (-021)* V77351 thru Present

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Wiring Diagrams

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Primary Fuses B-2

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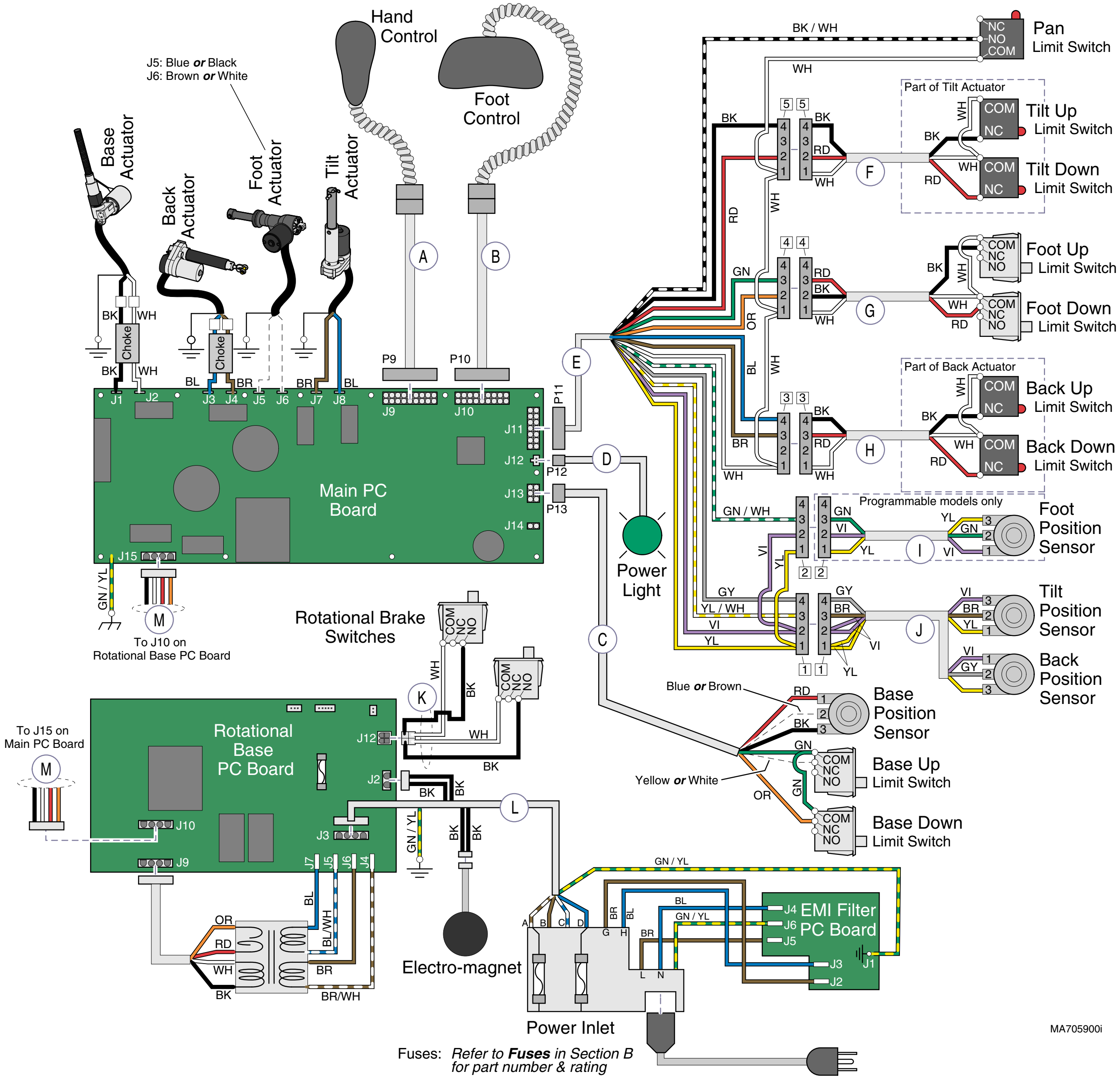
Hand Control
Foot Control
Pan Limit Switch
NC
NO
COM
BK / WH
WH
J5: Blue *or* Black
J6: Brown *or* White
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
A
B
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
F
Foot Up Limit Switch
Foot Down Limit Switch
G
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
Programmable models only
Foot Position Sensor
I
Tilt Position Sensor
Back Position Sensor
J
BK
WH
RD
GN
OR
BL
BR
GY
VI
YL
GN / WH
YL / WH
Choke
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
P9
P10
P11
P12
P13
Main PC Board
E
D
Power Light
C
GN / YL
M
To J10 on Rotational Base PC Board
Rotational Brake Switches
K
To J15 on Main PC Board
Rotational Base PC Board
Blue *or* Brown
Base Position Sensor
Yellow *or* White
Base Up Limit Switch
Base Down Limit Switch
L
BL / WH
BR / WH
Electro-magnet
EMI Filter PC Board
Power Inlet
MA705900i

Fuses: *Refer to **Fuses** in Section B for part number & rating*

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	002-1110-02
B	Connection Port Harness *[long - foot end]*	002-1110-03
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness *[includes green light]*	015-1793-01
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	n/a *(part of Tilt actuator)*
G	Foot Limit Switch Harness	015-1731-00
H	Back Limit Switch Harness	n/a *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	015-1773-00 *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	015-1761-00 *(incl. both sensors)*
K	Brake Switch Harness	015-1967-00
L	Rotational Base PC Board - Power Inlet	015-1966-00
M	Rotational Base PC Board - Main PC Board	015-1968-00

Models: **Serial Numbers:**	Non-Programmable **630** (-005) All	Programmable **630** (-006) All		

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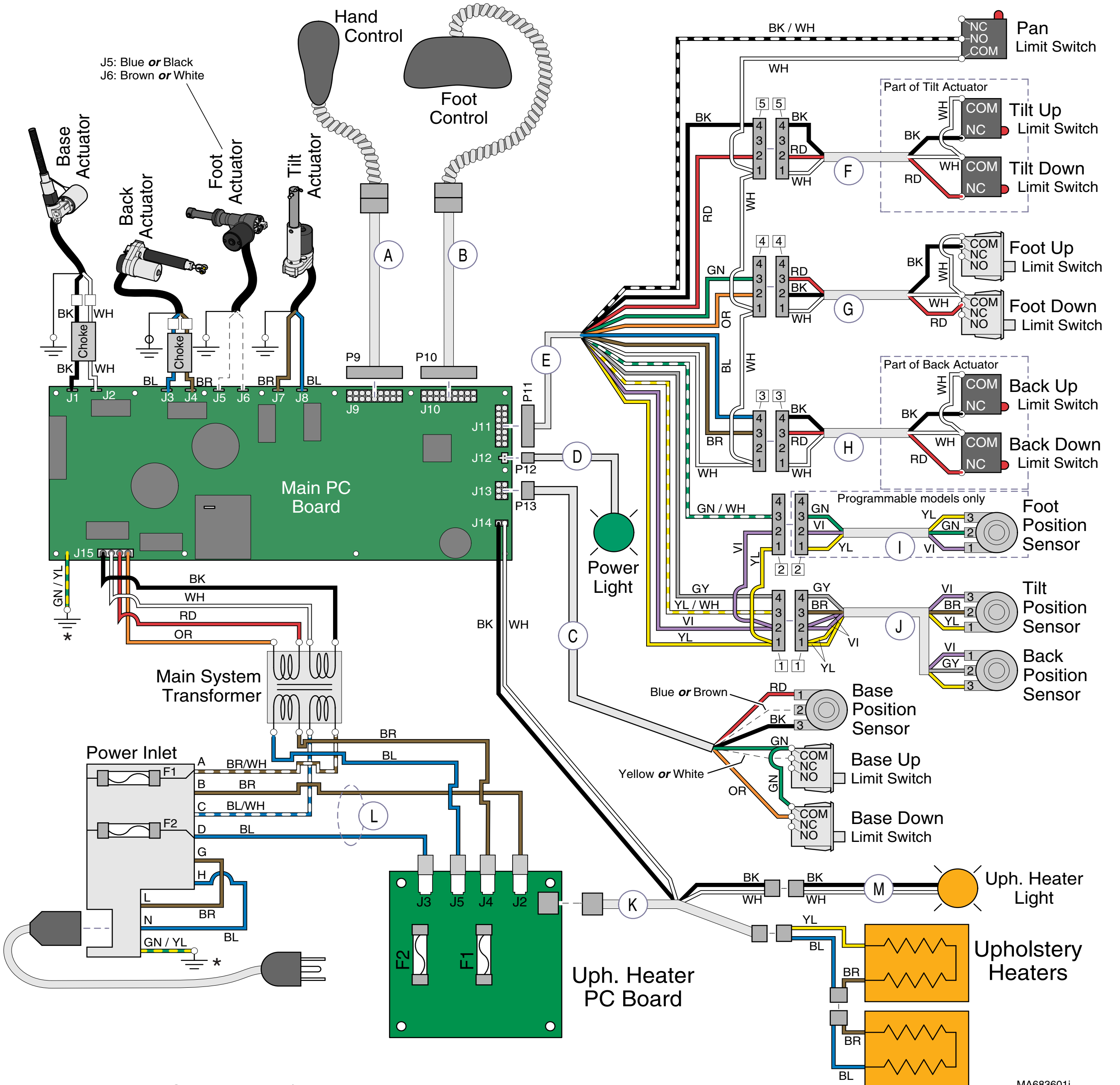
Wiring Diagrams

Refer To: **Go To Page:**
Primary Fuses B-2

Item	Harness Description *(sensors & switches not included)*	Part Number
A	Connection Port Harness *[short - head end]*	**002-1110-00**
B	Connection Port Harness *[long - foot end]*	**002-1110-01**
C	Position Sensor / Limit Switch Harness - BASE	**015-1821-00**
D	Power Light Harness *[includes green light]*	**015-1793-00**
E	'PC Board to Junction Board' Harness	**015-1937-00**
F	Tilt Limit Switch Harness	**n/a** *(part of Tilt actuator)*
G	Foot Limit Switch Harness	**015-1731-00**
H	Back Limit Switch Harness	**n/a** *(part of Back actuator)*
I	Position Sensor Harness - FOOT *[Prog. models only]*	**015-1773-00** *(includes sensor)*
J	Position Sensor Harness - TILT & BACK	**015-1761-00** *(incl. both sensors)*
K	Uph. Heater PC Board - Uph. Heaters - Main PC Board	**015-1871-00**
L	Uph. Heater PC Board - Power Inlet	**015-1870-00**
M	Uph. Heater Light Harness *(includes light)*	**015-1938-00**


Hand Control
Foot Control
J5: Blue or Black
J6: Brown or White
Base Actuator
Back Actuator
Foot Actuator
Tilt Actuator
Choke
BK
WH
BL
BR
J1 J2 J3 J4 J5 J6 J7 J8 J9 J10
P9
P10
A
B
E
P11
J11
J12
P12
J13
P13
J14
J15
D
Main PC Board
Power Light
GN / YL
Main System Transformer
RD
OR
Pan Limit Switch
NC NO COM
BK / WH
Part of Tilt Actuator
Tilt Up Limit Switch
Tilt Down Limit Switch
COM
NC
F
G
Foot Up Limit Switch
Foot Down Limit Switch
Part of Back Actuator
Back Up Limit Switch
Back Down Limit Switch
H
GN
GN / WH
Programmable models only
Foot Position Sensor
I
VI
YL
GY
YL / WH
Tilt Position Sensor
Back Position Sensor
J
C
Blue or Brown
Base Position Sensor
Yellow or White
Base Up Limit Switch
Base Down Limit Switch
Power Inlet
F1
F2
A B C D G H L N
BR/WH
BL/WH
L
J3 J5 J4 J2
K
Uph. Heater PC Board
M
Uph. Heater Light
Upholstery Heaters
MA683601i

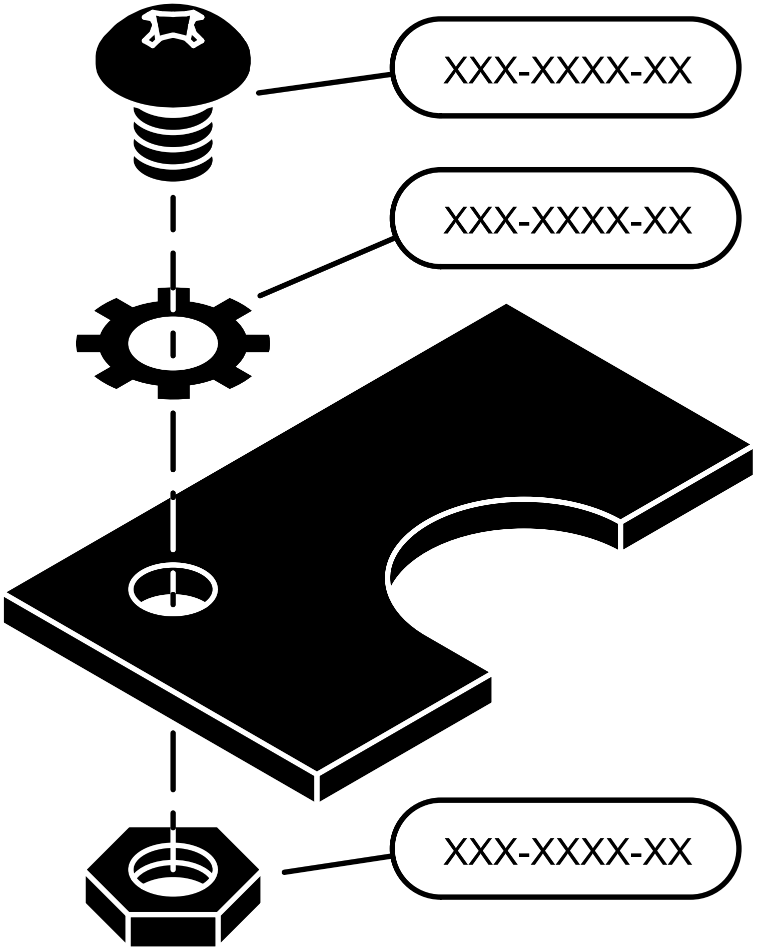
* Ground Wire p/n: 015-1774-03

Section E

Exploded Views & Parts Lists

Model Go To Page:
230 .... E-2
630 .... E-3
75:
(-019) E-2
(-020 / -021) E-3

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitve. ex. E-2)


XXX-XXXX-XX
XXX-XXXX-XX
XXX-XXXX-XX

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Next

230*(all)* / 75*(-019)*

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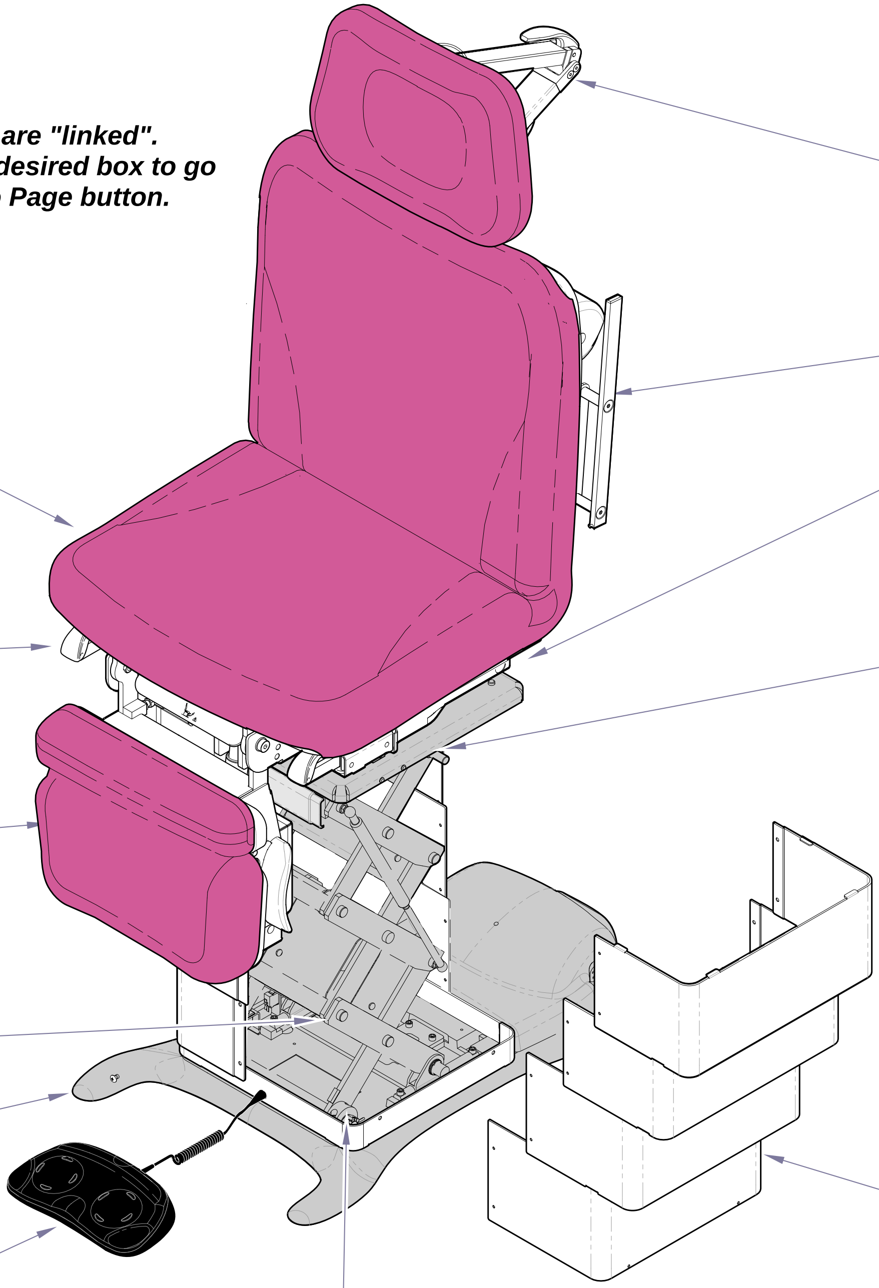
Go To Page:



Hand Control E-22

Ritter Upholstery E-6

Stirrup Components E-14

Foot Section:
Ritter Models E-8
includes:
foot actuator & limit switches

Base Actuator E-24

Base Section Components E-19
includes:
PC Board cover & base casting

Foot Control:
*Disc-style E-20**
Linear-style E-21

Scissor Components E-18
includes:
base limit switches & gas springs

Headlock Assembly E-13

Back Section:
*Ritter Models E-12**
includes:
back actuator & paper roll holder

Seat Section:
Ritter Models E-10
includes:
pan limit switch & treatment pan

Column Top Components E-17
includes:
tilt actuator & wire routing strap

Electrical Components E-23
includes:
PC board, power cord, & fuses

Label Location E-27

Base Shrouds:
Ritter Models E-16

OPTIONAL FEATURES

Table Receptacles E-26
Rotational Base:
Lower Section E-29
Upper Section E-30

**** Indicates multiple pages due to a serial number break for the parts illustration***

630*(all)* / 75*(-020/-021)*

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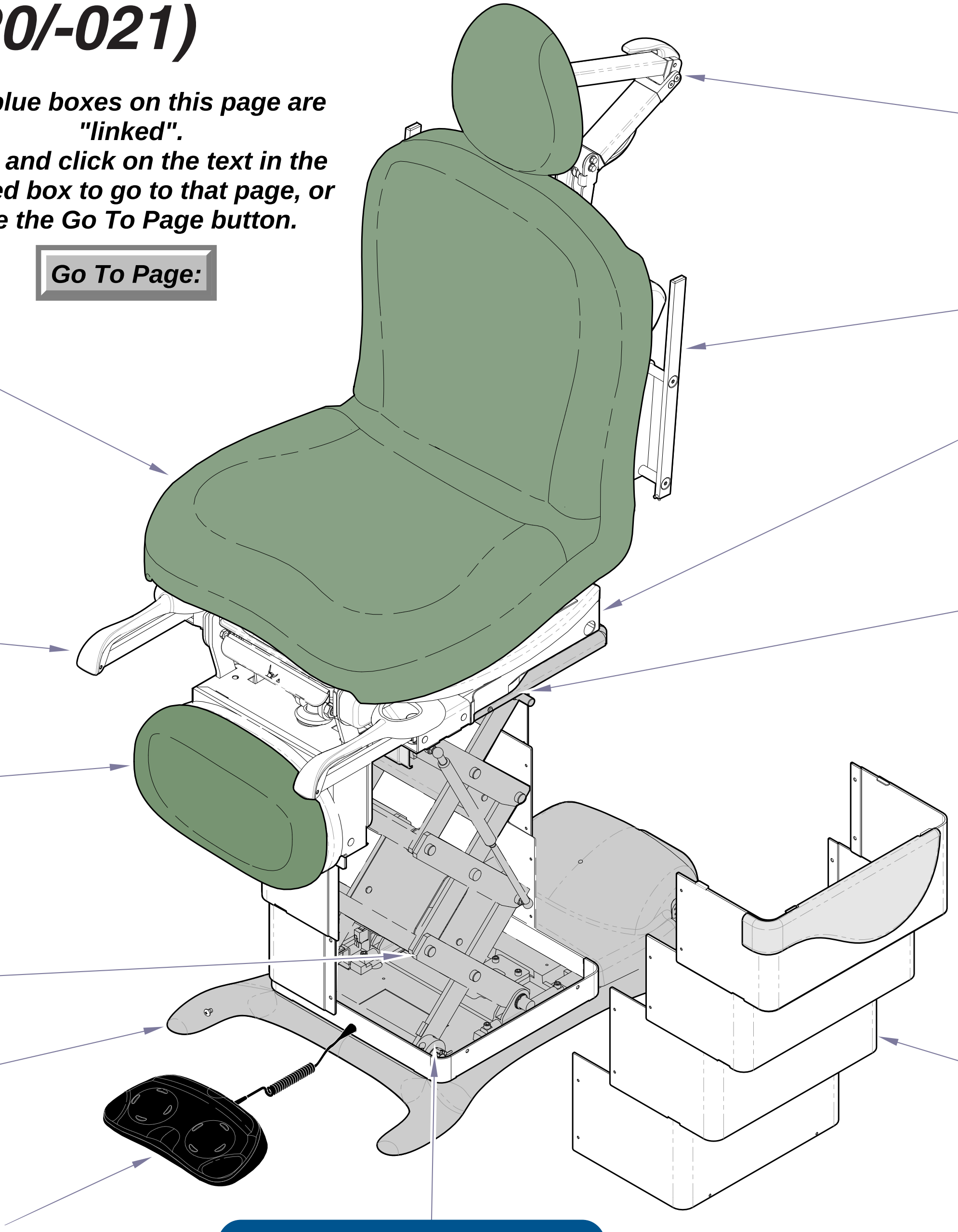

Hand Control E-22

Midmark Upholstery:
Premium E-4
Ultra-Premium E-5

Position Sensors E-25

Stirrup Components E-14

Foot Section:
Midmark Models E-7

includes:
foot actuator & limit switches

Base Actuator E-24

Base Section Components E-19

includes:
PC Board cover & base casting

Foot Control:
Disc-style E-20*
Linear-style E-21

Headlock Assembly E-13

Back Section:
Midmark Models E-11*

includes:
back actuator & paper roll holder

Seat Section:
Midmark Models E-9*

includes:
pan limit switch & treatment pan

Column Top Components E-17

includes:
tilt actuator & wire routing strap

Electrical Components E-23

includes:
PC board, power cord, & fuses

Label Location:
Midmark Models E-27

Base Shrouds:
Midmark Models E-15

Scissor Components E-18

includes:
base limit switches & gas springs

OPTIONAL FEATURES

Table Receptacles E-26
Htd Uph. PC Board E-28*
Rotational Base:
Lower Section E-29
Upper Section E-30

**** Indicates multiple pages due to a serial number break for the parts illustration***

Back

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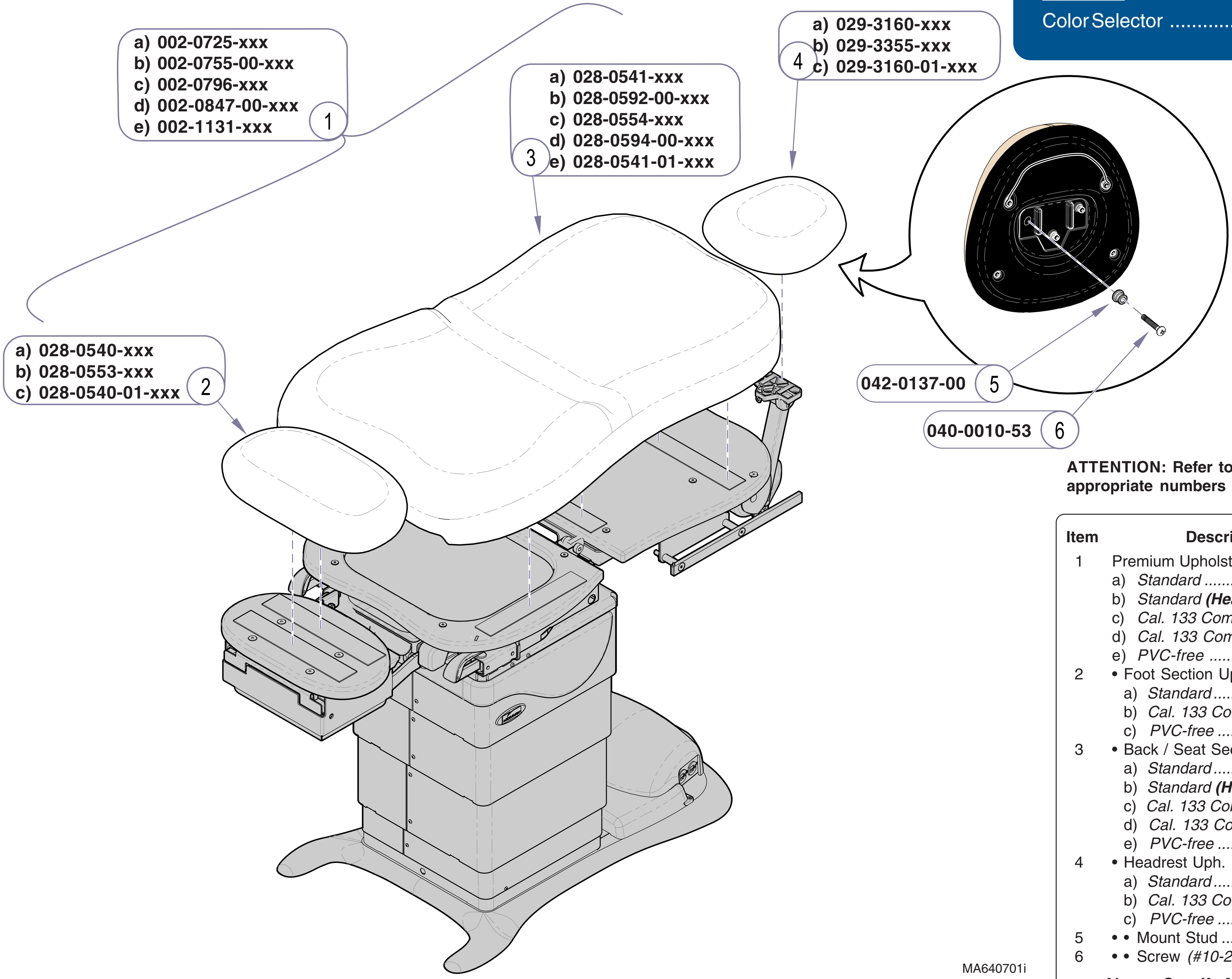
Next

Refer To:

Color Selector .... www.midmark.com



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e) 002-1131-xxx
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b) 028-0592-00-xxx
c) 028-0554-xxx
d) 028-0594-00-xxx
e) 028-0541-01-xxx
3
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b) 029-3355-xxx
c) 029-3160-01-xxx
4
a) 028-0540-xxx
b) 028-0553-xxx
c) 028-0540-01-xxx
2
042-0137-00
5
040-0010-53
6
MA640701i

ATTENTION: Refer to ***Color Selector*** link for appropriate numbers to replace -xxx.

Item	Description	Qty.
1	Premium Upholstery Kit *(incl. items 2 thru 4)*:	
	a) *Standard*	1
	b) *Standard **(Heated)***	1
	c) *Cal. 133 Compliant*	1
	d) *Cal. 133 Compliant **(Heated)***	1
	e) *PVC-free*	1
2	• Foot Section Uph.	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
3	• Back / Seat Section Uph.	
	a) *Standard*	1
	b) *Standard **(Heated)***	1
	c) *Cal. 133 Compliant*	1
	d) *Cal. 133 Compliant **(Heated)***	1
	e) *PVC-free*	1
4	• Headrest Uph. *(incl. items 5 & 6)*	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
5	• • Mount Stud	3
6	• • Screw *(#10-24 x 1 1/4")*	3

Always Specify Model & Serial Number

Back

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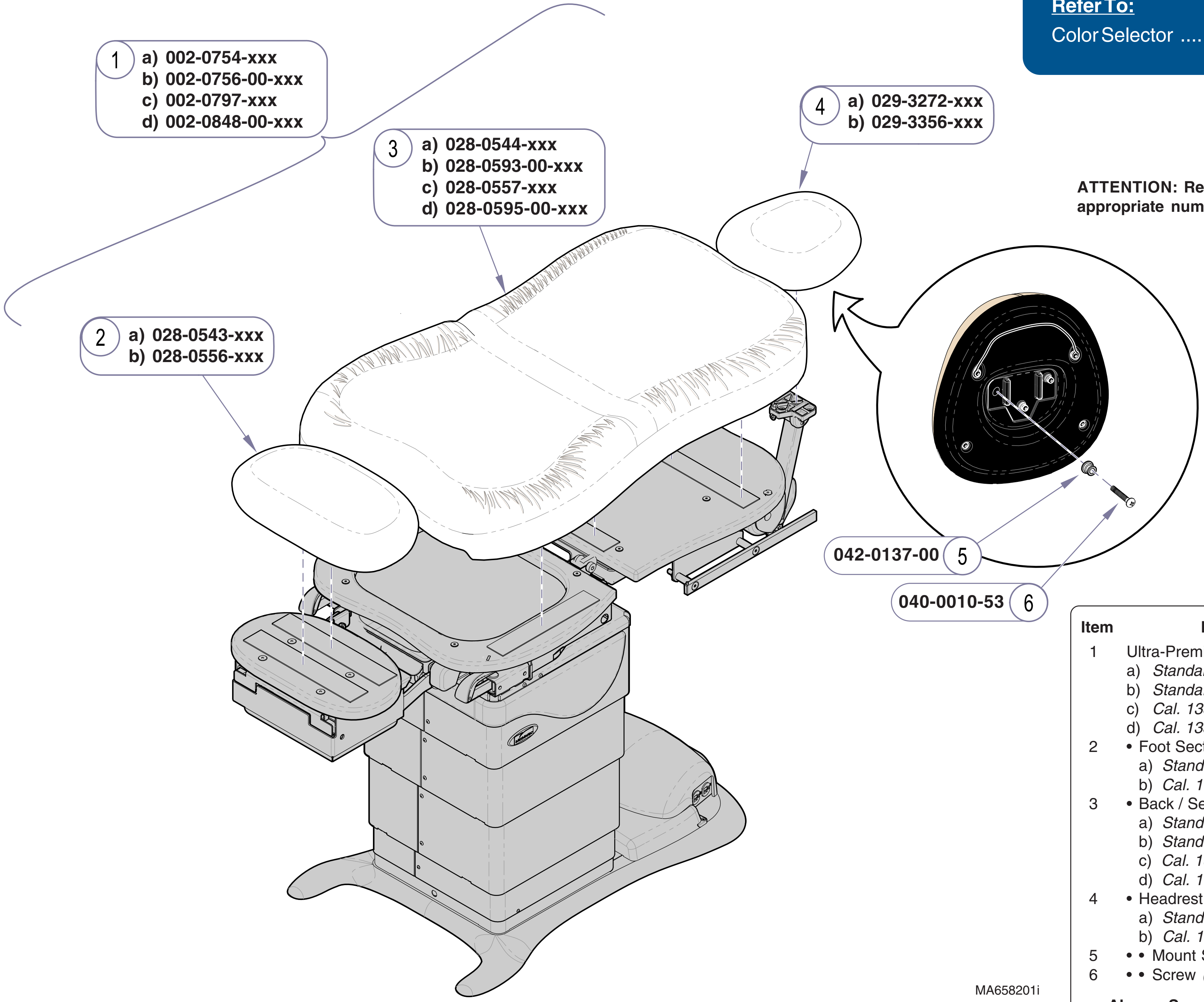
Next

Refer To:

Color Selector .... www.midmark.com

ATTENTION: Refer to *Color Selector* link for appropriate numbers to replace -xxx.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b) 028-0593-00-xxx
c) 028-0557-xxx
d) 028-0595-00-xxx
4
a) 029-3272-xxx
b) 029-3356-xxx
2
a) 028-0543-xxx
b) 028-0556-xxx
042-0137-00
5
040-0010-53
6
MA658201i

Item	Description	Qty.
1	Ultra-Premium Uph. Kit *(incl. items 2 thru 4)*:	
	a) *Standard*	1
	b) *Standard **(Heated)***	1
	c) *Cal. 133 Compliant*	1
	d) *Cal. 133 Compliant **(Heated)***	1
2	• Foot Section Uph.	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
3	• Back / Seat Section Uph.	
	a) *Standard*	1
	b) *Standard **(Heated)***	1
	c) *Cal. 133 Compliant*	1
	d) *Cal. 133 Compliant **(Heated)***	1
4	• Headrest Uph.	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
5	• • Mount Stud	3
6	• • Screw *(#10-24 x 1 1/4")*	3

Always Specify Model & Serial Number

Models:	***630** (all)*	***75** (-020/-021)*
Serial Numbers:	All	All

Midmark Upholstery:
Ultra-Premium

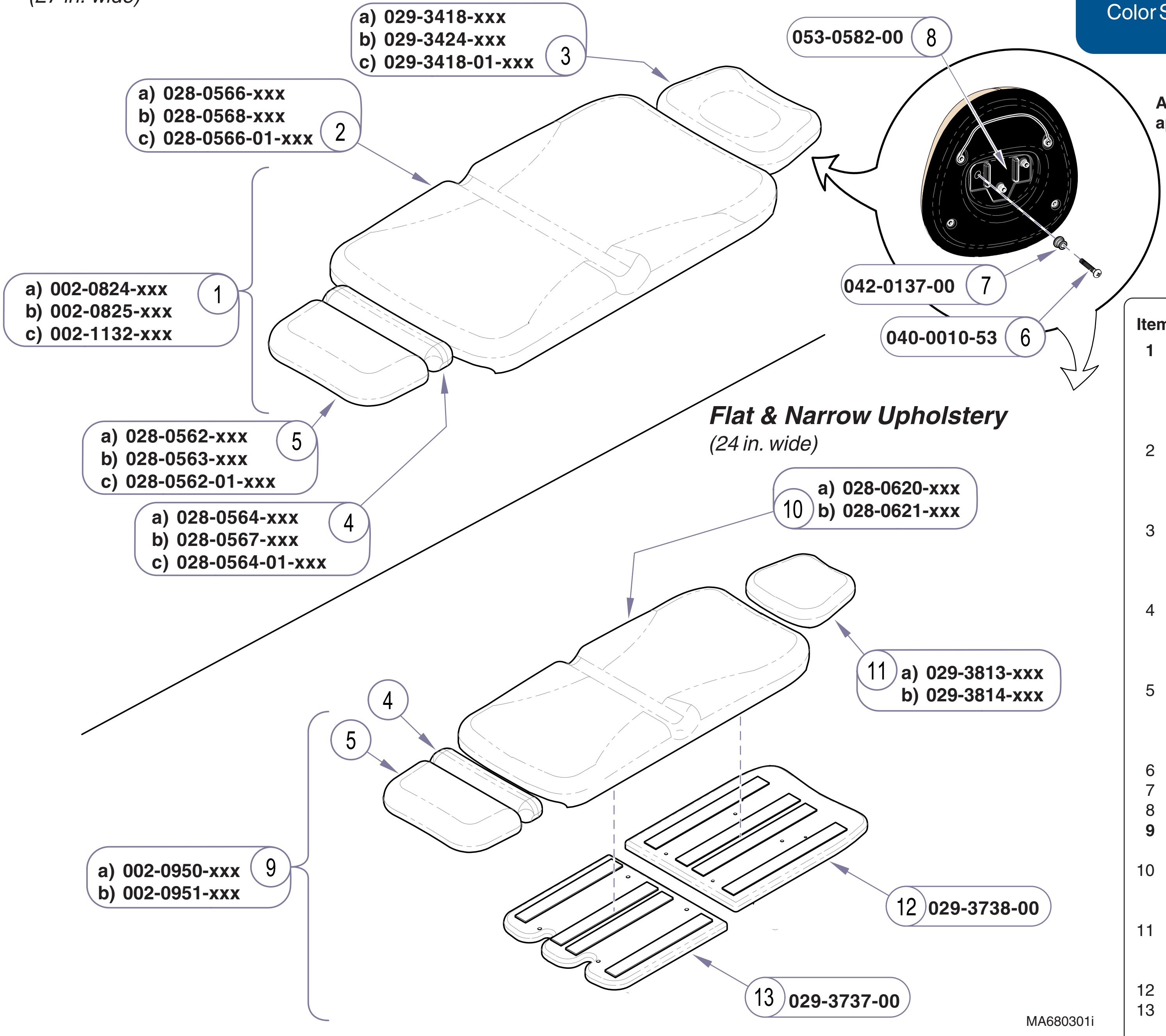
Refer To:

Color Selector .... www.midmark.com

ATTENTION: Refer to *Color Selector* link for appropriate numbers to replace -xxx.

Standard Width Upholstery

(27 in. wide)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b) 002-0825-xxx
c) 002-1132-xxx
1
042-0137-00
7
040-0010-53
6
a) 028-0562-xxx
b) 028-0563-xxx
c) 028-0562-01-xxx
5
a) 028-0564-xxx
b) 028-0567-xxx
c) 028-0564-01-xxx
4

Flat & Narrow Upholstery

(24 in. wide)

a) 028-0620-xxx
10
b) 028-0621-xxx
11
a) 029-3813-xxx
b) 029-3814-xxx
4
5
a) 002-0950-xxx
b) 002-0951-xxx
9
12
029-3738-00
13
029-3737-00

MA680301i

Item	Description	Qty.
1	**Ritter Upholstery Kit - *Standard Width***	
	(incl. items 2 thru 7):	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
2	• Back / Seat Upholstery.	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
3	• Headrest Upholstery	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
4	• Thigh Upholstery.	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
5	• Foot Upholstery	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
	c) *PVC-free*	1
6	• Screw	3
7	• Upholstery Mount Stud	3
8	• Headboard Pillow Mount	1
9	**Ritter Flat & Narrow Upholstery Kit**	
	(incl. items 4 thru 7 & 9 thru12)	1
10	• Back / Seat Upholstery - *Narrow*	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
11	• Headrest Upholstery - *Narrow*	
	a) *Standard*	1
	b) *Cal. 133 Compliant*	1
12	• Back Support Board - *Narrow*	1
13	• Seat Support Board - *Narrow*	1

Always Specify Model & Serial Number

Models: ***Serial Numbers:***	***230*** *(all)* All	***75*** *(-019)* All

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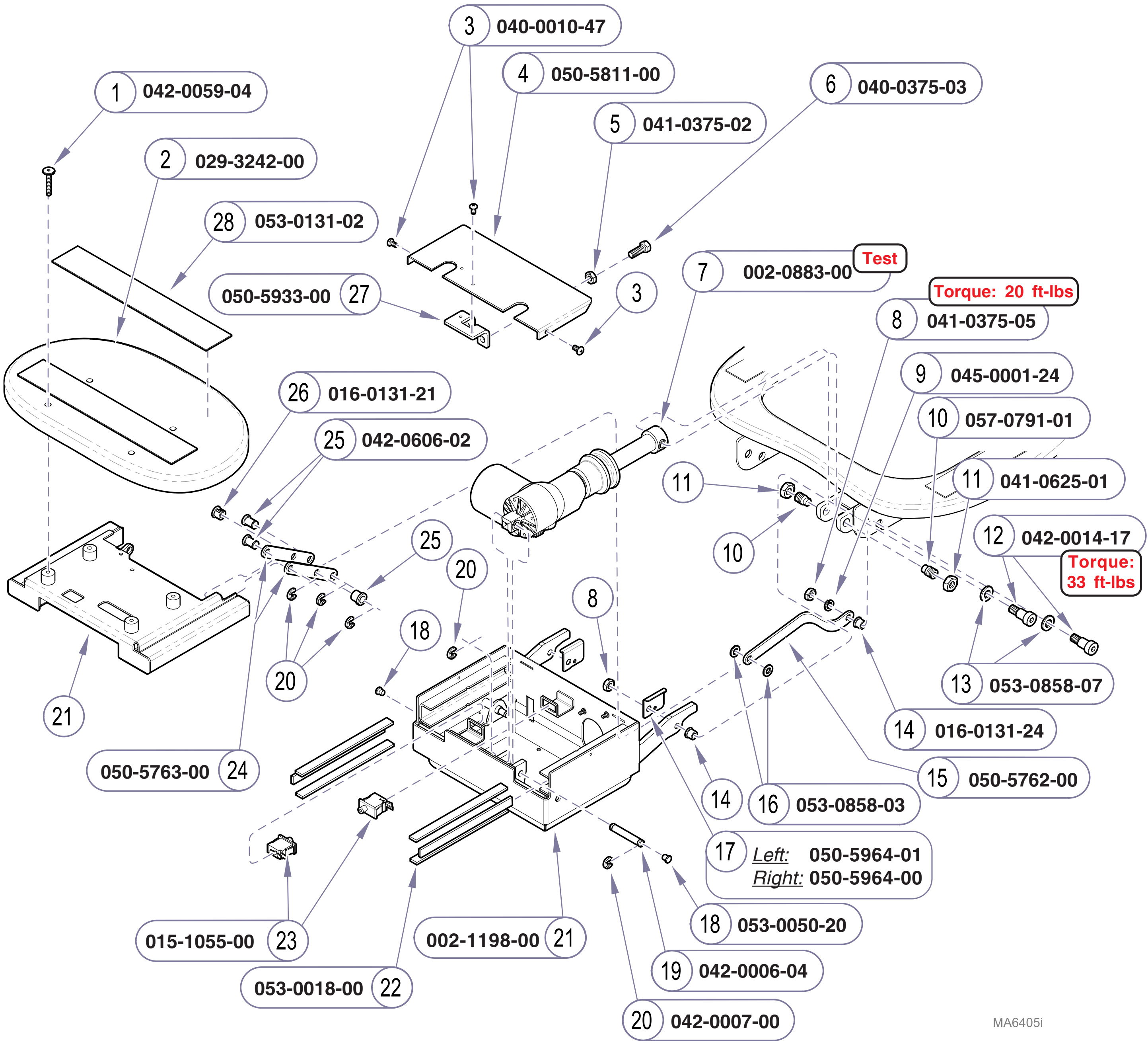
Foot Actuator Test B-24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2 029-3242-00
3 040-0010-47
4 050-5811-00
5 041-0375-02
6 040-0375-03
28 053-0131-02
050-5933-00 27
3
7 002-0883-00 Test
Torque: 20 ft-lbs
8 041-0375-05
9 045-0001-24
10 057-0791-01
26 016-0131-21
25 042-0606-02
11
11 041-0625-01
10
12 042-0014-17
Torque: 33 ft-lbs
25
20
8
18
20
21
13 053-0858-07
14 016-0131-24
15 050-5762-00
050-5763-00 24
14
16 053-0858-03
17 Left: 050-5964-01 Right: 050-5964-00
015-1055-00 23
002-1198-00 21
18 053-0050-20
053-0018-00 22
19 042-0006-04
20 042-0007-00
MA6405i

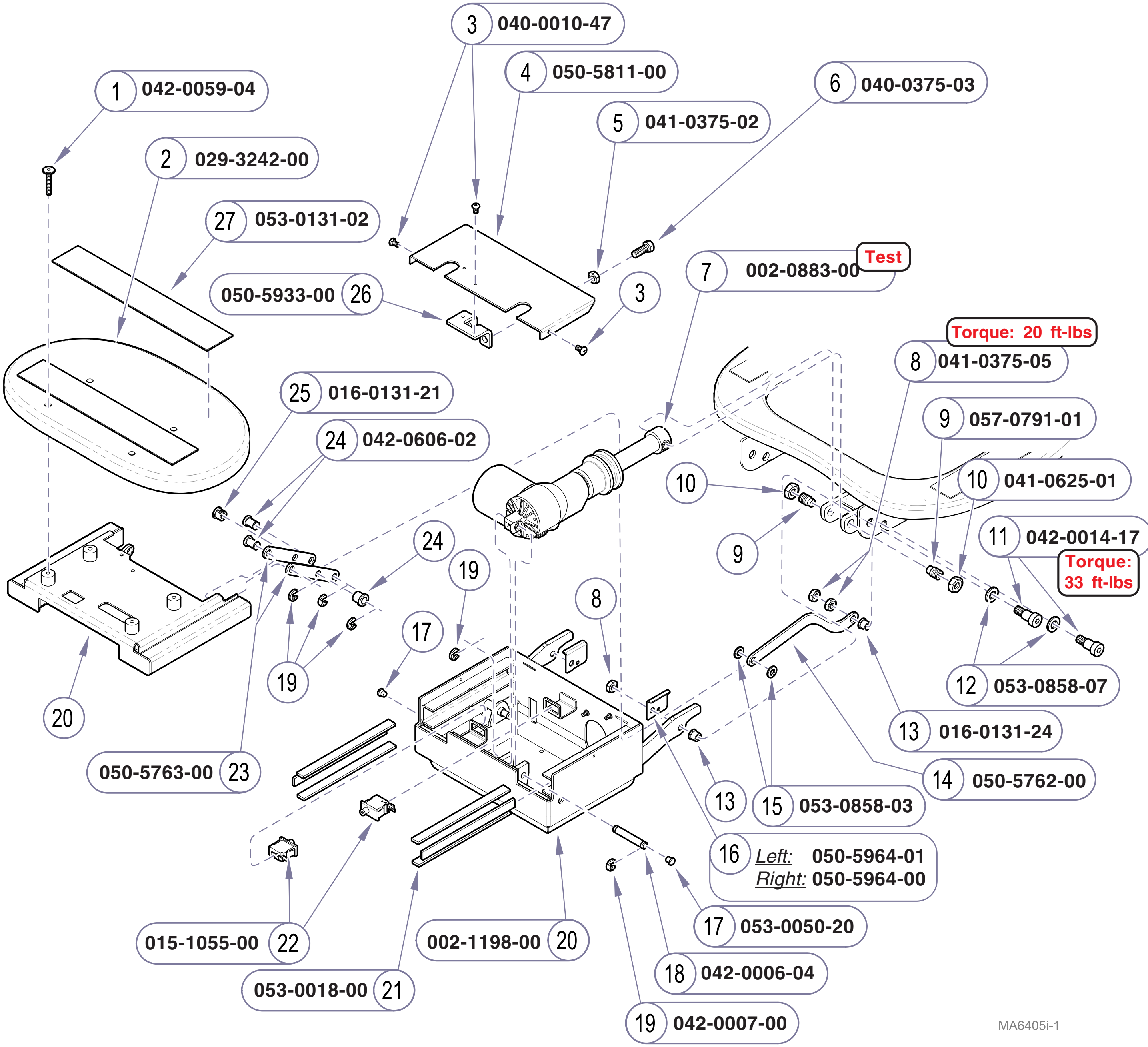
NOTE
Actuator kit includes a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575)*	4
2	Foot Pad Mounting Board *(incl. velcro)*	1
3	Screw *(#10-24 x 3/8")*	4
4	Top Foot Cover	1
5	Nut *(3/8-16)*	2
6	Bolt *(3/8-16 x 1")*	2
7	Foot Actuator Kit *(see NOTE)*	1
8	Nut *(3/8"-16)*	2
9	Lock Washer	2
10	Pivot Screw	2
11	Jam Nut *(5/8"-11)*	2
12	Shoulder Screw *(1/2" x 3/8")*	4
13	Nylon Washer *(3/4" x 1/2" x 1/8")*	3
14	Flange Bearing	4
15	Seat Weldment Link	2
16	Nylon Washer *(5/8" x 3/8" x 1/32")*	4
17	Restraint Bracket	2
18	Hole Plug	2
19	Clevis Pin	1
20	E-ring *(3/8" diameter)*	8
21	Foot Weldment Assembly	1
22	Nylon Tape *(42" required)*	AR
23	Limit Switch	2
24	Pivot Link	4
25	Clevis Pin	4
26	Flange Bearing	4
27	Adjustable Limit Switch Bracket	1
28	Velcro Hook	2

Always Specify Model & Serial Number

Models: ***Serial Numbers:***	***630*** *(all)* V1000 thru V717499	***75*** *(-020/-021)* V1000 thru V717499

Refer To: **Go To Page:**
Foot Actuator Test B-24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2 029-3242-00
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7 002-0883-00 Test
050-5933-00 26
3
Torque: 20 ft-lbs
8 041-0375-05
25 016-0131-21
9 057-0791-01
24 042-0606-02
10
10 041-0625-01
11 042-0014-17
Torque: 33 ft-lbs
24
9
19
8
17
19
12 053-0858-07
20
13 016-0131-24
050-5763-00 23
14 050-5762-00
13
15 053-0858-03
16 Left: 050-5964-01
Right: 050-5964-00
17 053-0050-20
015-1055-00 22
002-1198-00 20
18 042-0006-04
053-0018-00 21
19 042-0007-00
MA6405i-1

NOTE
Actuator kit includes a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575)*	4
2	Foot Pad Mounting Board *(incl. velcro)*	1
3	Screw *(#10-24 x 3/8")*	4
4	Top Foot Cover	1
5	Nut *(3/8-16)*	2
6	Bolt *(3/8-16 x 1")*	2
7	Foot Actuator Kit *(see NOTE)*	1
8	Nut *(3/8"-16)*	4
9	Pivot Screw	2
10	Jam Nut *(5/8"-11)*	2
11	Shoulder Screw *(1/2" x 3/8")*	4
12	Nylon Washer *(3/4" x 1/2" x 1/8")*	3
13	Flange Bearing	4
14	Seat Weldment Link	2
15	Nylon Washer *(5/8" x 3/8" x 1/32")*	4
16	Restraint Bracket	2
17	Hole Plug	2
18	Clevis Pin	1
19	E-ring *(3/8" diameter)*	8
20	Foot Weldment Assembly	1
21	Nylon Tape *(42" required)*	AR
22	Limit Switch	2
23	Pivot Link	4
24	Clevis Pin	4
25	Flange Bearing	4
26	Adjustable Limit Switch Bracket	1
27	Velcro Hook	2

Always Specify Model & Serial Number

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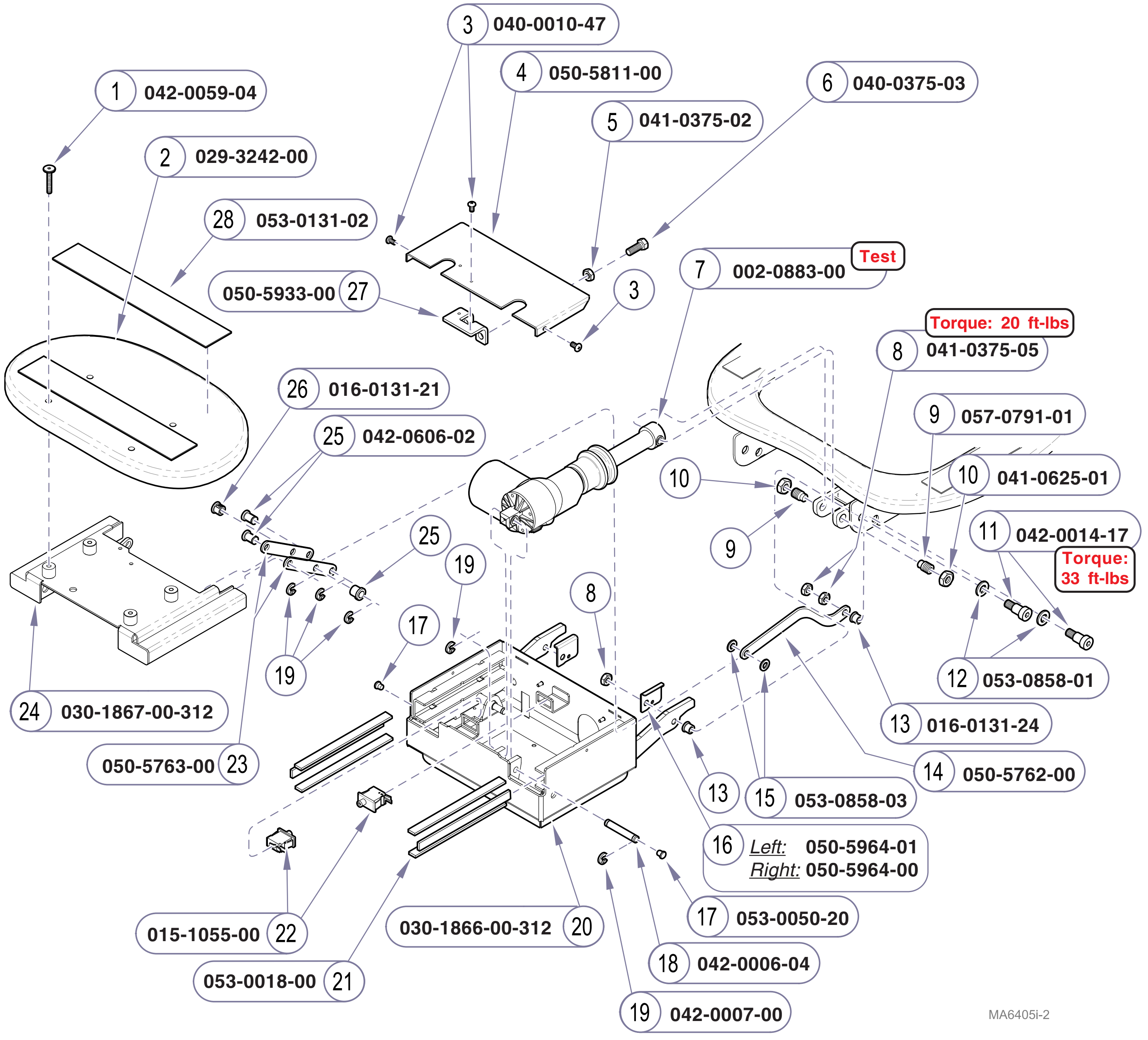
Foot Actuator Test B-24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050-5933-00 27
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4 050-5811-00
5 041-0375-02
6 040-0375-03
3
7 002-0883-00 Test
Torque: 20 ft-lbs
8 041-0375-05
9 057-0791-01
10 041-0625-01
11 042-0014-17
Torque: 33 ft-lbs
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13 016-0131-24
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13
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16 Left: 050-5964-01 Right: 050-5964-00
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18 042-0006-04
19 042-0007-00
015-1055-00 22
053-0018-00 21
030-1866-00-312 20
MA6405i-2

NOTE
Actuator kit includes a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575)*	4
2	Foot Pad Mounting Board *(incl. velcro)*	1
3	Screw *(#10-24 x 3/8")*	4
4	Top Foot Cover	1
5	Nut *(3/8-16)*	2
6	Bolt *(3/8-16 x 1")*	2
7	Foot Actuator Kit *(see NOTE)*	1
8	Nut *(3/8"-16)*	6
9	Pivot Screw	2
10	Jam Nut *(5/8"-11)*	2
11	Shoulder Screw *(1/2" x 3/8")*	4
12	Nylon Washer *(3/4" x 1/2" x 1/8")*	3
13	Flange Bearing	4
14	Seat Weldment Link	2
15	Nylon Washer *(5/8" x 3/8" x 1/32")*	4
16	Restraint Bracket	2
17	Hole Plug	2
18	Clevis Pin	1
19	E-ring *(3/8" diameter)*	8
20	Foot Weldment	1
21	Nylon Tape *(42" required)*	AR
22	Limit Switch	2
23	Pivot Link	4
24	Foot Extension Weldment	1
25	Clevis Pin	4
26	Flange Bearing	4
27	Adjustable Limit Switch Bracket	1
28	Velcro Hook	2

Always Specify Model & Serial Number

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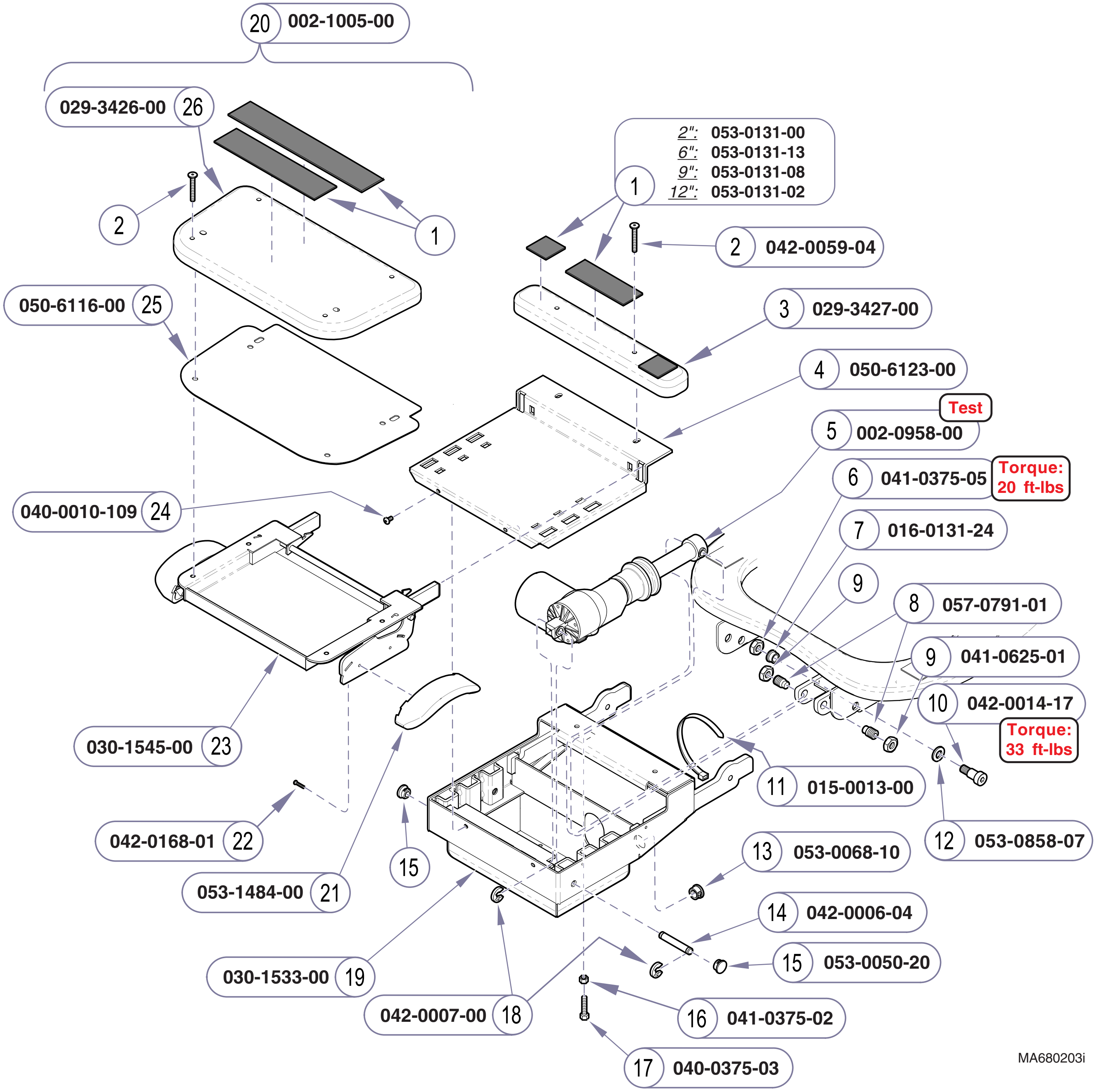
Foot Actuator Test B-24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4 050-6123-00
Test
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6 041-0375-05
Torque: 20 ft-lbs
040-0010-109 24
7 016-0131-24
9
8 057-0791-01
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030-1533-00 19
15 053-0050-20
042-0007-00 18
16 041-0375-02
17 040-0375-03
MA680203i

Item	Description	Qty.
1	Velcro Hook *(lengths are listed)*	AR
2	JC Bolt *(1/4"-20 x 1")*	6
3	Thigh Pad Mounting Board *(includes velcro strips)*	1
4	Foot Trim Cover	1
5	Foot Actuator Kit	1
6	Nut *(3/8 -016)*	2
7	Flange Bearing	2
8	Pivot Screw	2
9	Jam Nut *(5/8"-11)*	2
10	Shoulder Bolt *(1/2" x 3/8")*	2
11	Cable Tie *(7 1/4" long)*	2
12	Nylon Washer *(3/4" x 1/2" x 1/8")*	2
13	Snap Bushing	1
14	Clevis Pin	1
15	Hole Plug	2
16	Jam Nut *(3/8"-16)*	1
17	Bolt *(3/8" -16 x 1)*	1
18	E-ring *(3/8")*	2
19	Foot Weldment	1
20	Knee Rest Assembly Kit (includes items 2, & 21 thru 26)	1
21	• Release Handle	2
22	• Screw *(3.5-1.57 a 16 atf pt zn)*	4
23	• Knee / Chest Weldment	1
24	• Screw *(#10-24 x 3/8")*	2
25	• Foot Substrate Support Plate	1
26	• Foot Pad Mounting Board *(includes velcro strips)*	1

Always Specify Model & Serial Number

Foot Section:
Ritter Models

Models:	***230*** *(all)*	***75*** *(-019)*
Serial Numbers:	All	All

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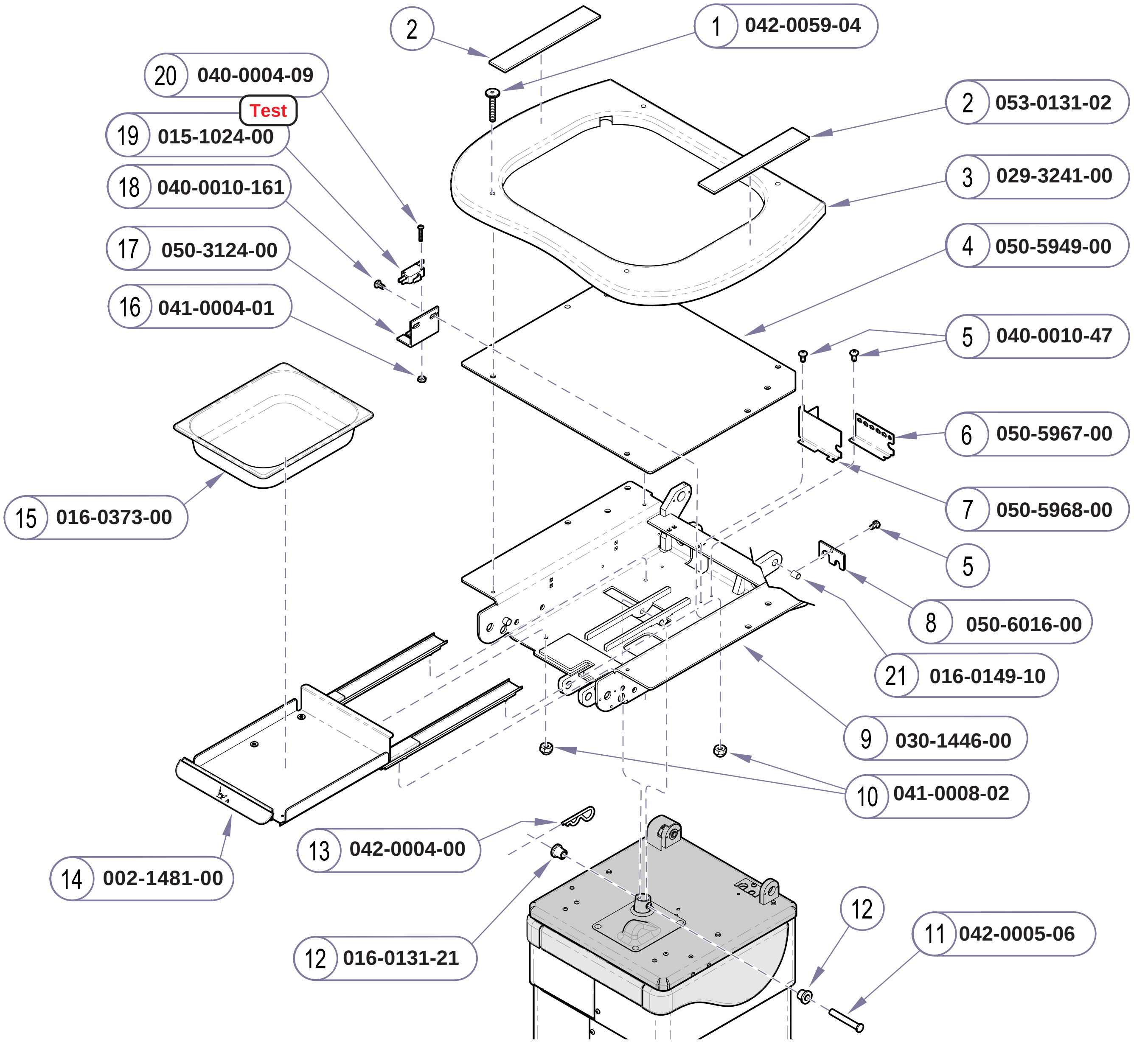
Limit Switch Test........................ B-4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7 050-5968-00
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21 016-0149-10
9 030-1446-00
10 041-0008-02
14 002-1481-00
13 042-0004-00
12 016-0131-21
12
11 042-0005-06
MA640201

Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575")*	4
2	Velcro Hook *(2" x 12")*	2
3	Seat Mounting Board *(includes velcro)*	1
4	Seat Cushion Support Panel	1
5	Screw *(10-24 x 3/8" Phillips Pan Head)*	4
6	Electrical Connection Bracket	1
7	Electrical Cover Panel	1
8	Corrugated Tubing Bracket	1
9	Seat Weldment	1
10	Nut *(8-32)*	4
11	Pin	2
12	Bushing	2
13	Clevis Pin	1
14	Treatment Pan Slide Assembly	1
15	Treatment Pan	1
16	Nut *(4-40)*	2
17	Limit Switch Bracket	1
18	Screw *(10-24 x 1/4' Phillips Pan Head)*	2
19	Limit Switch	1
20	Screw *(4-40 x 5/8" Phillips Pan Head)*	1
21	Bearing	1

Always Specify Model & Serial Number

Models: ***Serial Numbers:***	***630*** *(all)* V2200 thru V76347	***75*** *(-020/-021)* V2200 thru V76347

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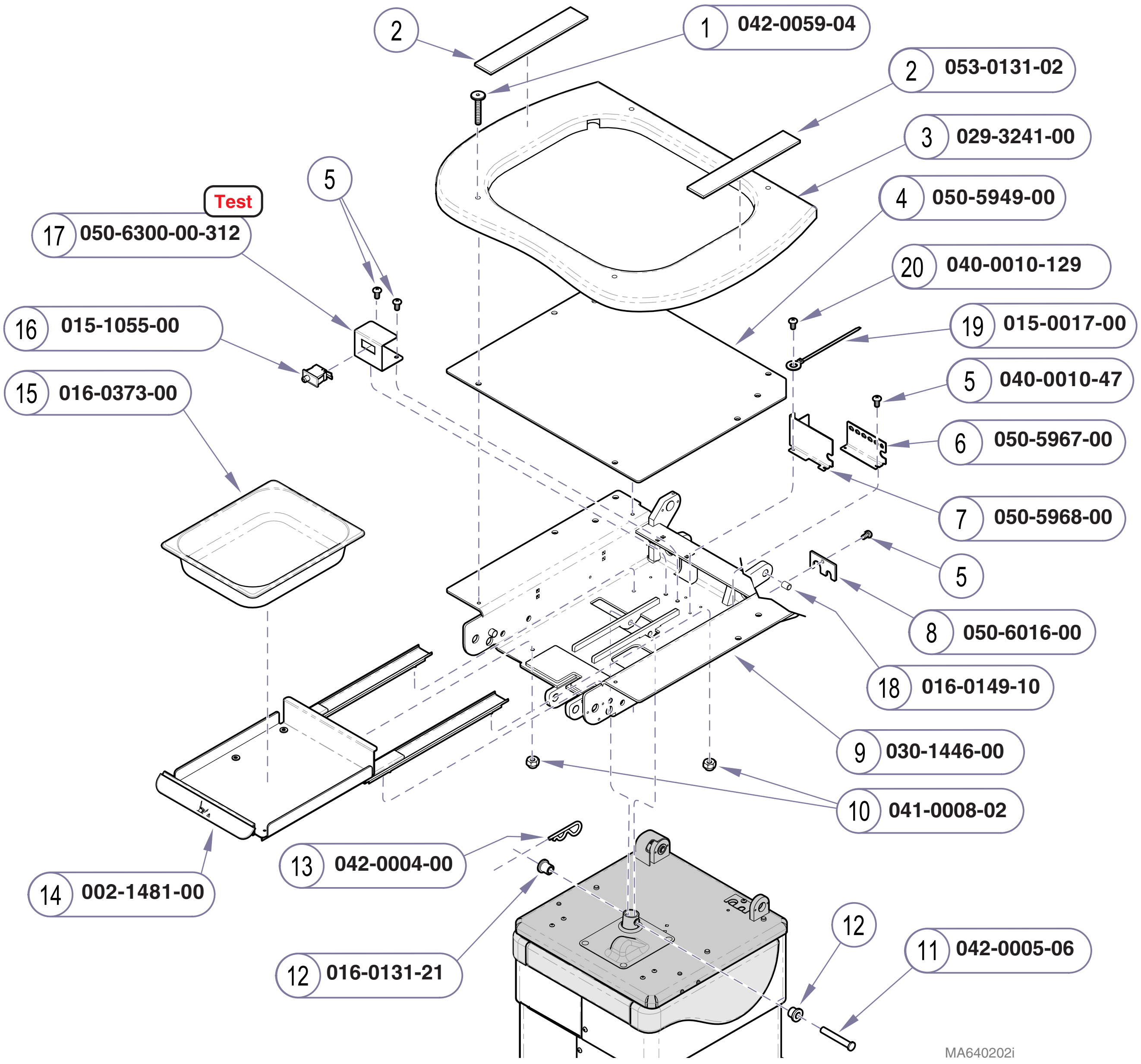
Limit Switch Test B-4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2 053-0131-02
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6 050-5967-00
7 050-5968-00
5
8 050-6016-00
18 016-0149-10
9 030-1446-00
10 041-0008-02
11 042-0005-06
12
12 016-0131-21
13 042-0004-00
14 002-1481-00
15 016-0373-00
16 015-1055-00
Test
17 050-6300-00-312
5
MA640202i

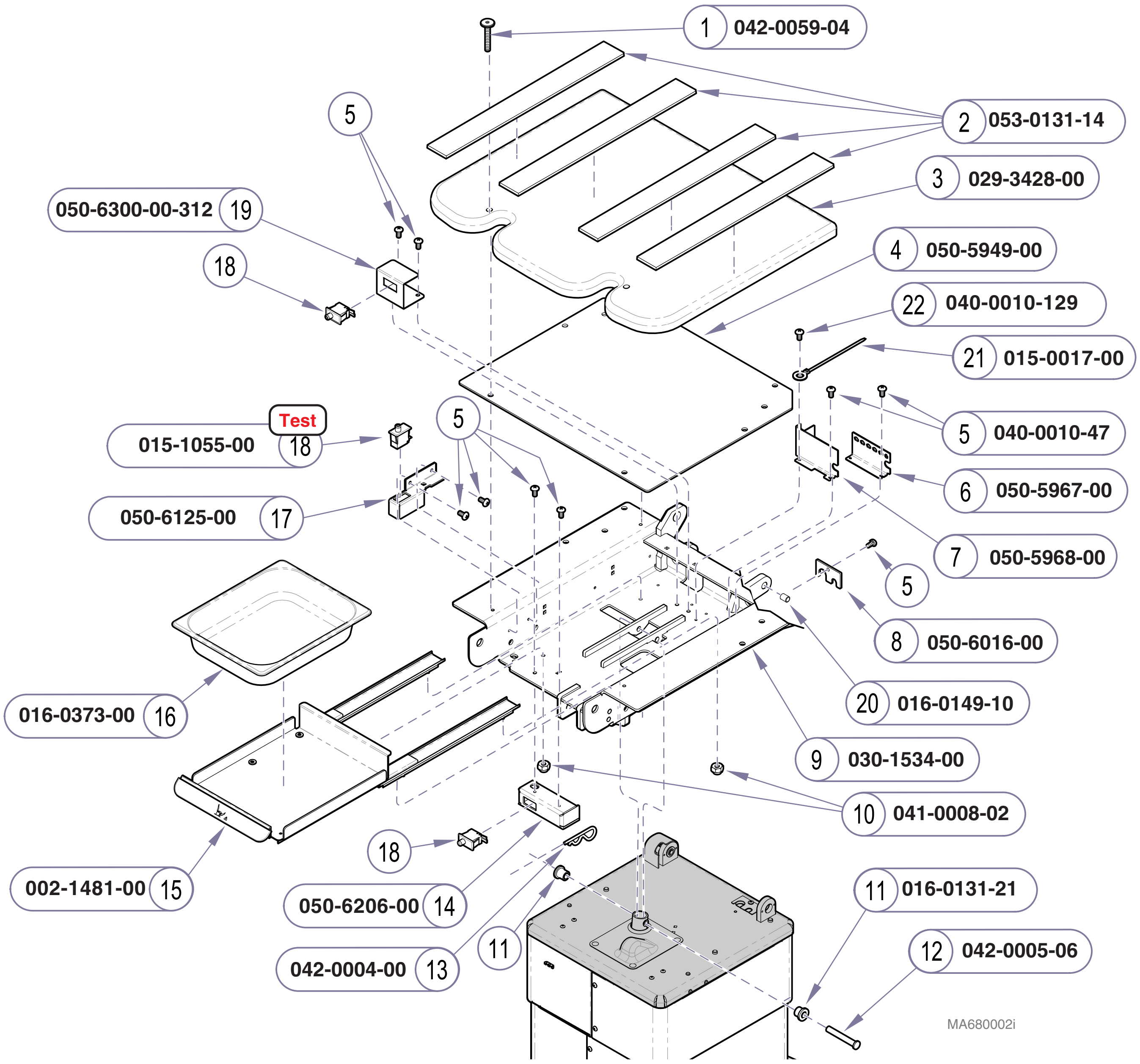
Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575")*	4
2	Velcro Hook *(2" x 12")*	2
3	Seat Mounting Board *(includes velcro)*	1
4	Seat Cushion Support Panel	1
5	Screw *(10-24 x 3/8" Phillips Pan Head)*	3
6	Electrical Connection Bracket	1
7	Electrical Cover Panel	1
8	Corrugated Tubing Bracket	1
9	Seat Weldment	1
10	Nut *(8-32)*	4
11	Pin	2
12	Bushing	2
13	Clevis Pin	1
14	Treatment Pan Slide Assembly	1
15	Treatment Pan	1
16	Limit Switch	1
17	Limit Switch Bracket	1
18	Bearing	1
19	Cable Tie	1
20	Screw *(10-24 x 1/2" Phillips Pan Head)*	1

Always Specify Model & Serial Number

Models: ***Serial Numbers:***	***630*** *(all)* V76348 thru Present	***75*** ***(-020/-021)*** V76348 thru Present

Refer To: **Go To Page:**

Limit Switch Test B-4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9 030-1534-00
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Test
015-1055-00 18
5
050-6125-00 17
016-0373-00 16
002-1481-00 15
18
050-6206-00 14
042-0004-00 13
11
MA680002i

Item	Description	Qty.
1	Bolt *(1/4-20 x 1.575")*	4
2	Velcro Hook *(2" x 12")*	2
3	Seat Mounting Board *(includes velcro)*	1
4	Seat Cushion Support Panel	1
5	Screw *(10-24 x 3/8" Phillips Pan Head)*	9
6	Electrical Connection Bracket	1
7	Electrical Cover Panel	1
8	Corrugated Tubing Bracket	1
9	Seat Weldment	1
10	Nut *(8-32)*	4
11	Bushing	2
12	Pin	2
13	Clevis Pin	1
15	Treatment Pan Slide Assembly	1
16	Treatment Pan	1
17	Upper Limit Switch Bracket	1
18	Limit Switch	2
19	Pan Limit Switch Bracket	1
20	Bearing	1
21	Cable Tie	1
22	Screw *(10-24 x 1/2" Phillips Pan Head)*	1

Always Specify Model & Serial Number

Models: **Serial Numbers:**	***230*** *(all)* All	***75*** *(-019)* All

Seat Section:
Ritter Models

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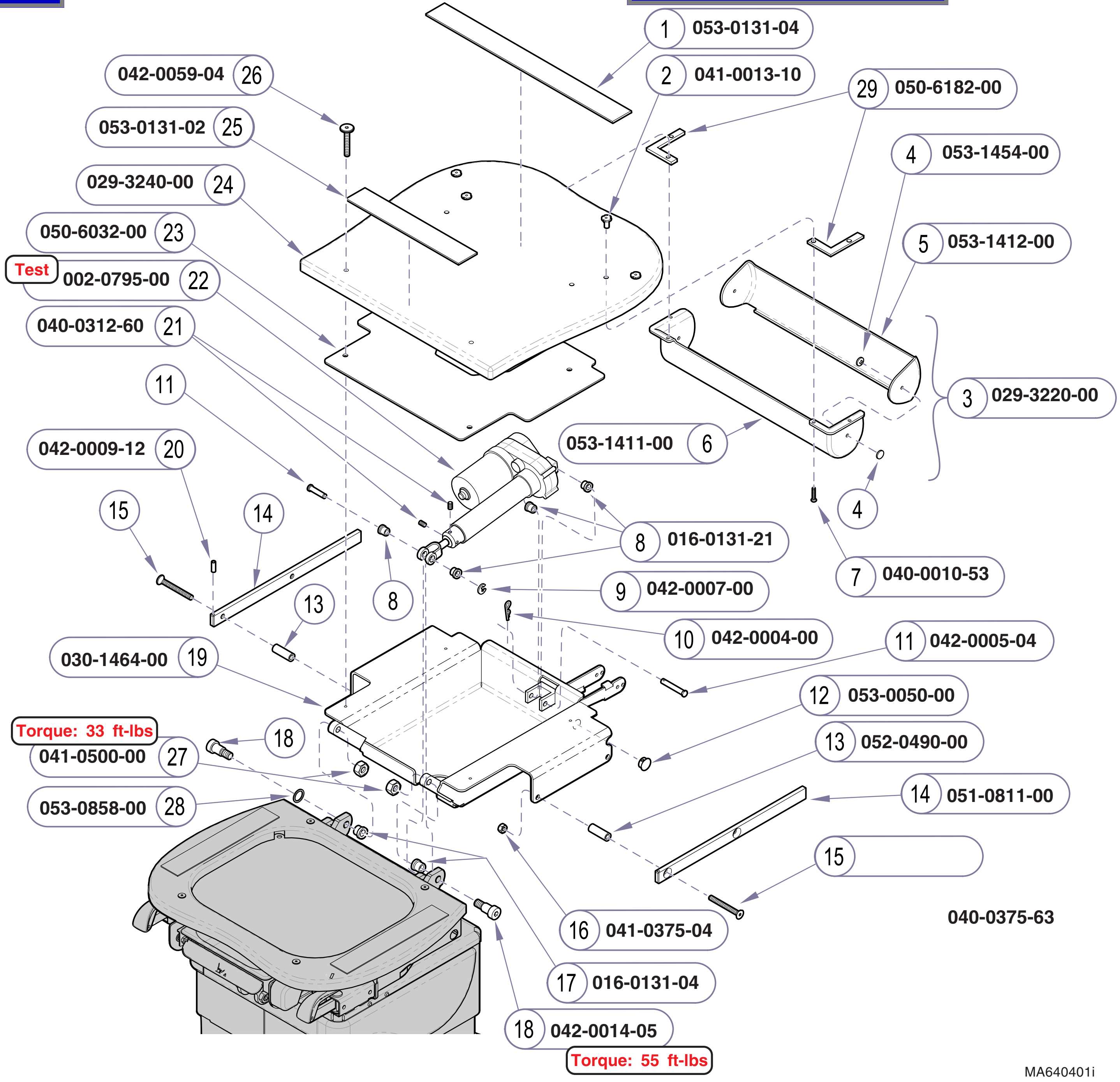
Back Actuator Test B-16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13 052-0490-00
14 051-0811-00
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040-0375-63
16 041-0375-04
17 016-0131-04
18 042-0014-05
Torque: 55 ft-lbs
042-0059-04 26
053-0131-02 25
029-3240-00 24
050-6032-00 23
Test
002-0795-00 22
040-0312-60 21
11
042-0009-12 20
15
14
13
8
030-1464-00 19
Torque: 33 ft-lbs
18
041-0500-00 27
053-0858-00 28
MA640401i

NOTE
Actuator kit includes the choke & a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Velcro Hook *(2" x 20")*	1
2	Wood Insert T-Nut	4
3	Paper Roll Holder Assembly *(includes items 4 thru 6)*	1
4	• Ratchet Rivet	4
5	• Paper Roll Holder Lid	1
6	• Paper Roll Holder	1
7	Screw *(#10-24 x 1 1/4" Phillips Pan Head)*	4
8	Flange Bearing	4
9	E-ring	1
10	Hitch Pin Clip	1
11	Clevis Pin	1
12	Hole Plug	1
13	Spacer	4
14	Side Rail	2
15	Bolt *(3/8-16 x 3" Flathead Socket)*	*4*
16	Nut *(3/8-16)*	4
17	Flange Bearing	2
18	Shoulder Bolt *(5/8" x 3/4")*	2
19	Back Weldment	1
20	Groove Pin *(3/16" x 1/2")*	2
21	Set Screw	2
22	Back Actuator Kit (*see NOTE*)	1
23	Back Assembly Cover	1
24	Back Mounting Board *(includes all T-Nuts & velcro)*	1
25	Velcro Hook *(2" x 12")*	1
26	JC Bolt *(1/4-20 x 1.575")*	*4*
27	Jam Nut (1/2"-13)	2
28	Washer, nylon	1
29	Spacer	2

Always Specify Model & Serial Number

Back Section:
Midmark Models

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	V1000 thru V185140	V1000 thru V185140

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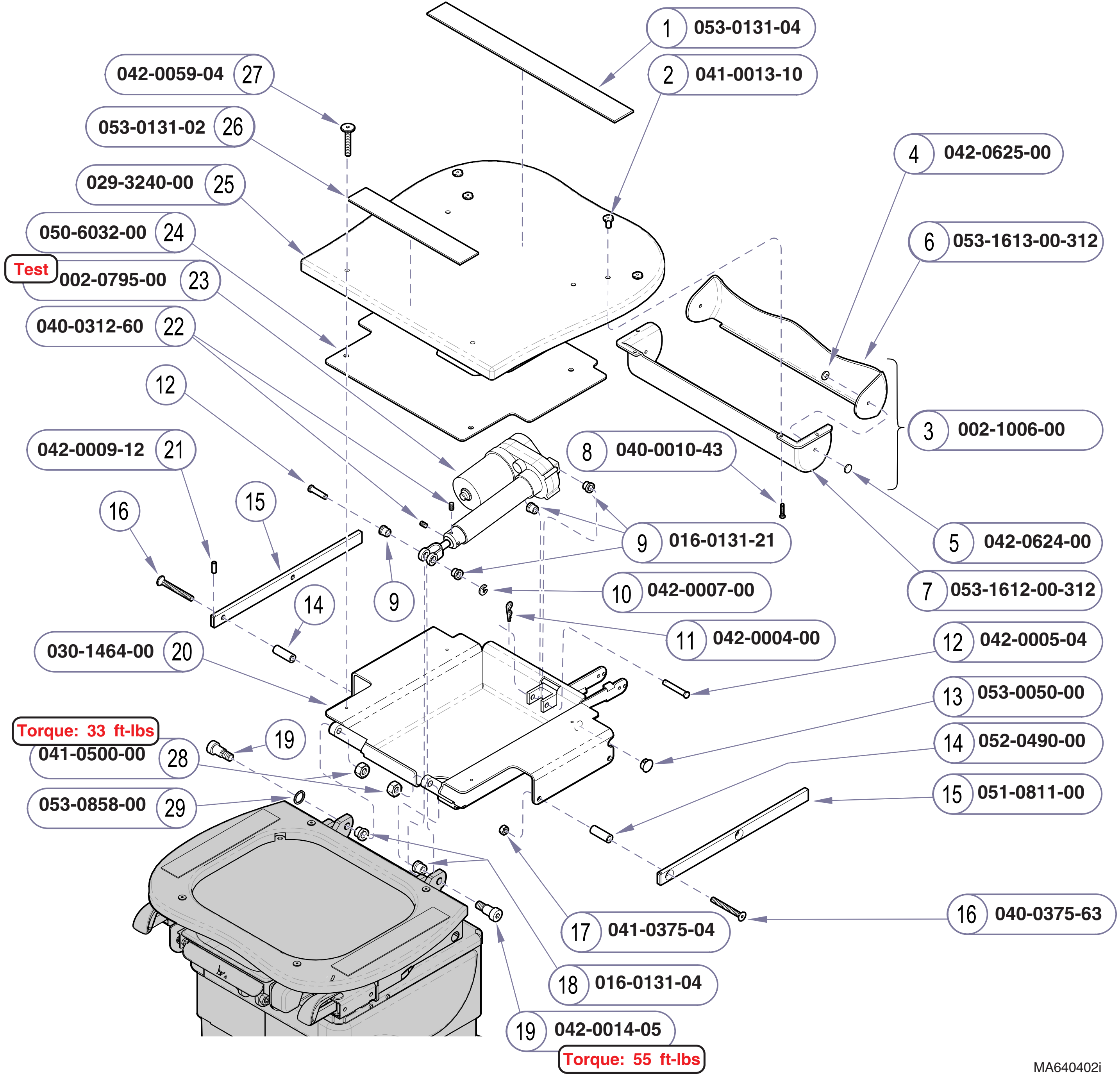
Back Actuator Test B-16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Test
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12
042-0009-12 21
16
15
14
9
4 042-0625-00
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13 053-0050-00
14 052-0490-00
15 051-0811-00
030-1464-00 20
Torque: 33 ft-lbs
041-0500-00 28
19
053-0858-00 29
16 040-0375-63
17 041-0375-04
18 016-0131-04
19 042-0014-05
Torque: 55 ft-lbs
MA640402i

NOTE

Actuator kit includes the choke & a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Velcro Hook *(2" x 20")*	1
2	Wood Insert T-Nut	4
3	Paper Roll Holder Kit *(includes items 4 thru 8)*	1
4	• Ratchet Rivet	4
5	• Cap	2
6	• Paper Roll Holder Lid	1
7	• Paper Roll Holder	1
8	• Screw *(#10-24 x 1" Phillips)*	4
9	Flange Bearing	4
10	E-ring	1
11	Hitch Pin Clip	1
12	Clevis Pin	1
13	Hole Plug	1
14	Spacer	4
15	Side Rail	2
16	Bolt *(3/8-16 x 3" Flathead Socket)*	*4*
17	Nut *(3/8-16)*	4
18	Flange Bearing	2
19	Shoulder Bolt *(5/8" x 3/4")*	2
20	Back Weldment	1
21	Groove Pin *(3/16" x 1/2")*	2
22	Set Screw	2
23	Back Actuator Kit *(see NOTE)*	1
24	Back Assembly Cover	1
25	Back Mounting Board *(includes all T-Nuts & velcro)*	1
26	Velcro Hook *(2" x 12")*	1
27	JC Bolt *(1/4-20 x 1.575")*	*4*
28	Jam Nut (1/2"-13)	2
29	Washer, nylon	1

Always Specify Model & Serial Number

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	V185141 thru Present	V185141 thru Present

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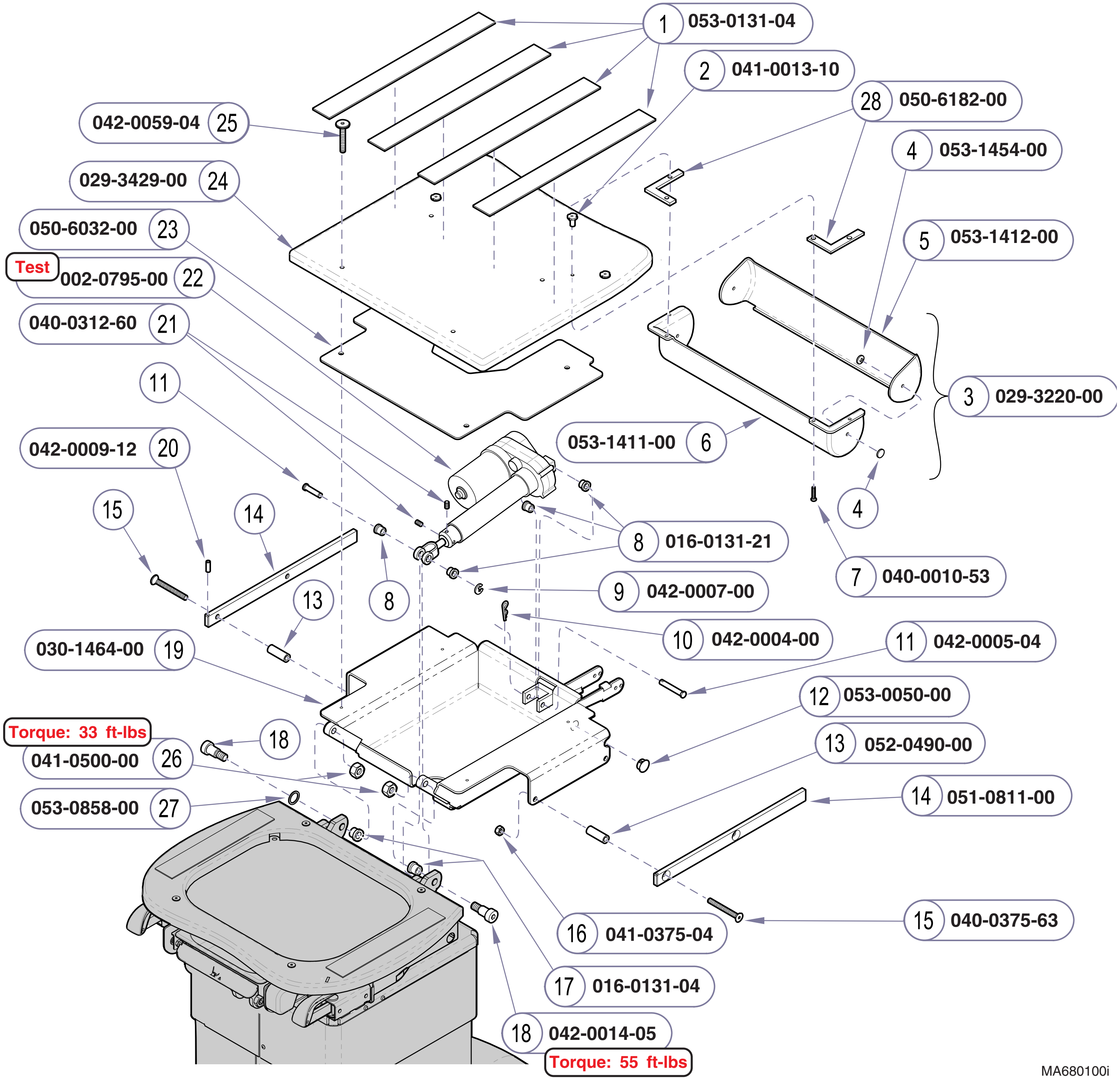
Back Actuator Test B-16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11 042-0005-04
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13 052-0490-00
14 051-0811-00
15 040-0375-63
16 041-0375-04
17 016-0131-04
18 042-0014-05
Torque: 55 ft-lbs
042-0059-04 25
029-3429-00 24
050-6032-00 23
Test
002-0795-00 22
040-0312-60 21
11
042-0009-12 20
15
14
13
8
030-1464-00 19
Torque: 33 ft-lbs
18
041-0500-00 26
053-0858-00 27
MA680100i

NOTE

Actuator kit includes the choke & a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Velcro Hook *(2" x 20")*	1
2	Wood Insert T-Nut	4
3	Paper Roll Holder Assembly *(includes items 4 thru 6)*	1
4	• Ratchet Rivet	4
5	• Paper Roll Holder Lid	1
6	• Paper Roll Holder	1
7	Screw *(#10-24 x 1 1/4" Phillips Pan Head)*	4
8	Flange Bearing	4
9	E-ring	1
10	Hitch Pin Clip	1
11	Clevis Pin	1
12	Hole Plug	1
13	Spacer	4
14	Side Rail	2
15	Bolt *(3/8-16 x 3" Flathead Socket)*	*4*
16	Nut *(3/8-16)*	4
17	Flange Bearing	2
18	Shoulder Bolt *(5/8" x 3/4")*	2
19	Back Weldment	1
20	Groove Pin *(3/16" x 1/2")*	2
21	Set Screw	2
22	Back Actuator Kit *(see NOTE)*	1
23	Back Assembly Cover	1
24	Back Mounting Board *(includes all T-Nuts & velcro)*	1
25	JC Bolt *(1/4-20 x 1.575")*	*4*
26	Jam Nut (1/2"-13)	2
27	Washer, nylon	1
28	Spacer	2

Always Specify Model & Serial Number

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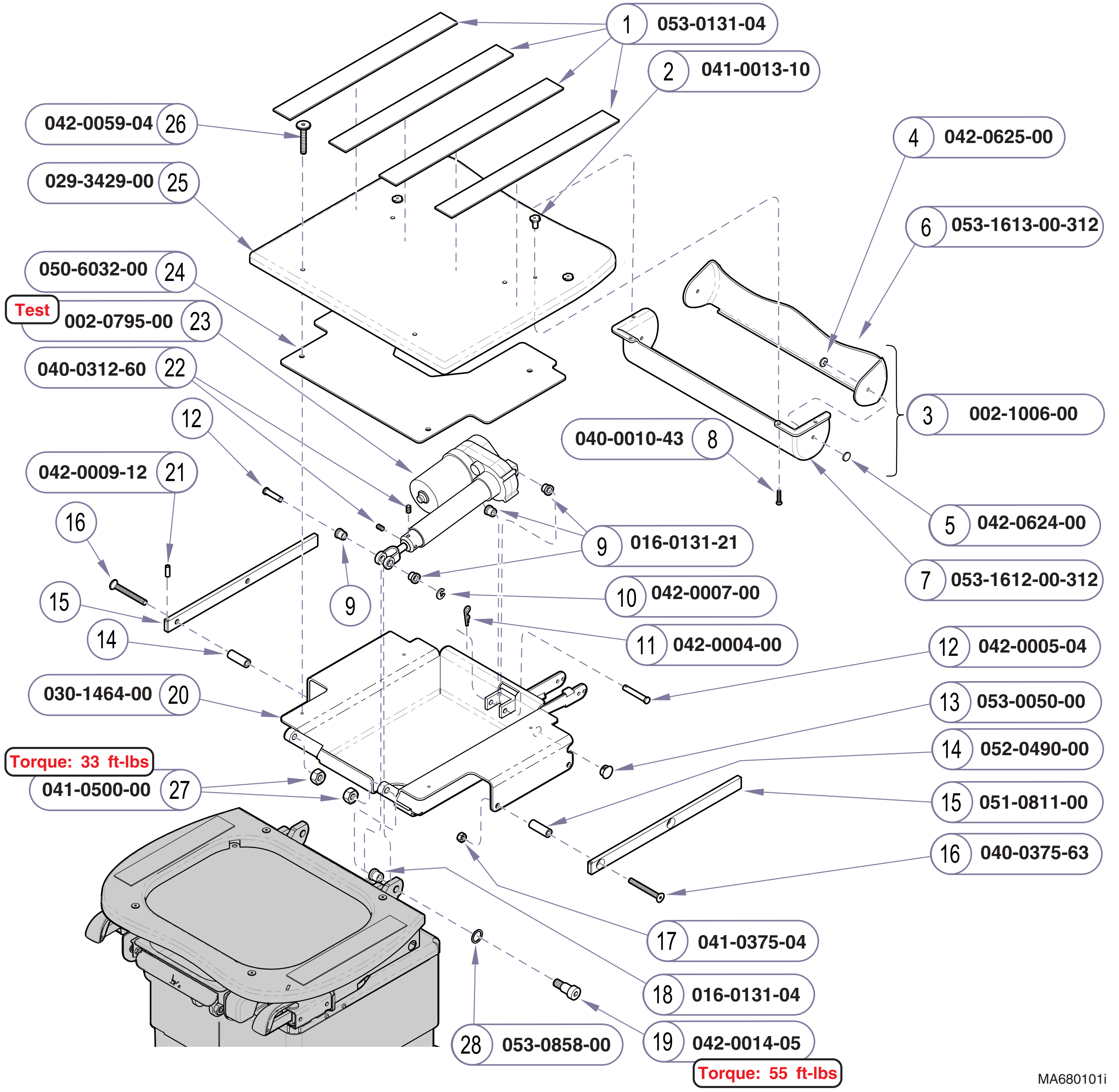
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Test
002-0795-00 23
040-0312-60 22
12
3 002-1006-00
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042-0009-12 21
16
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9
10 042-0007-00
14
11 042-0004-00
12 042-0005-04
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13 053-0050-00
14 052-0490-00
Torque: 33 ft-lbs
041-0500-00 27
15 051-0811-00
16 040-0375-63
17 041-0375-04
18 016-0131-04
28 053-0858-00
19 042-0014-05
Torque: 55 ft-lbs
MA680101i

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Back Actuator Test B-16

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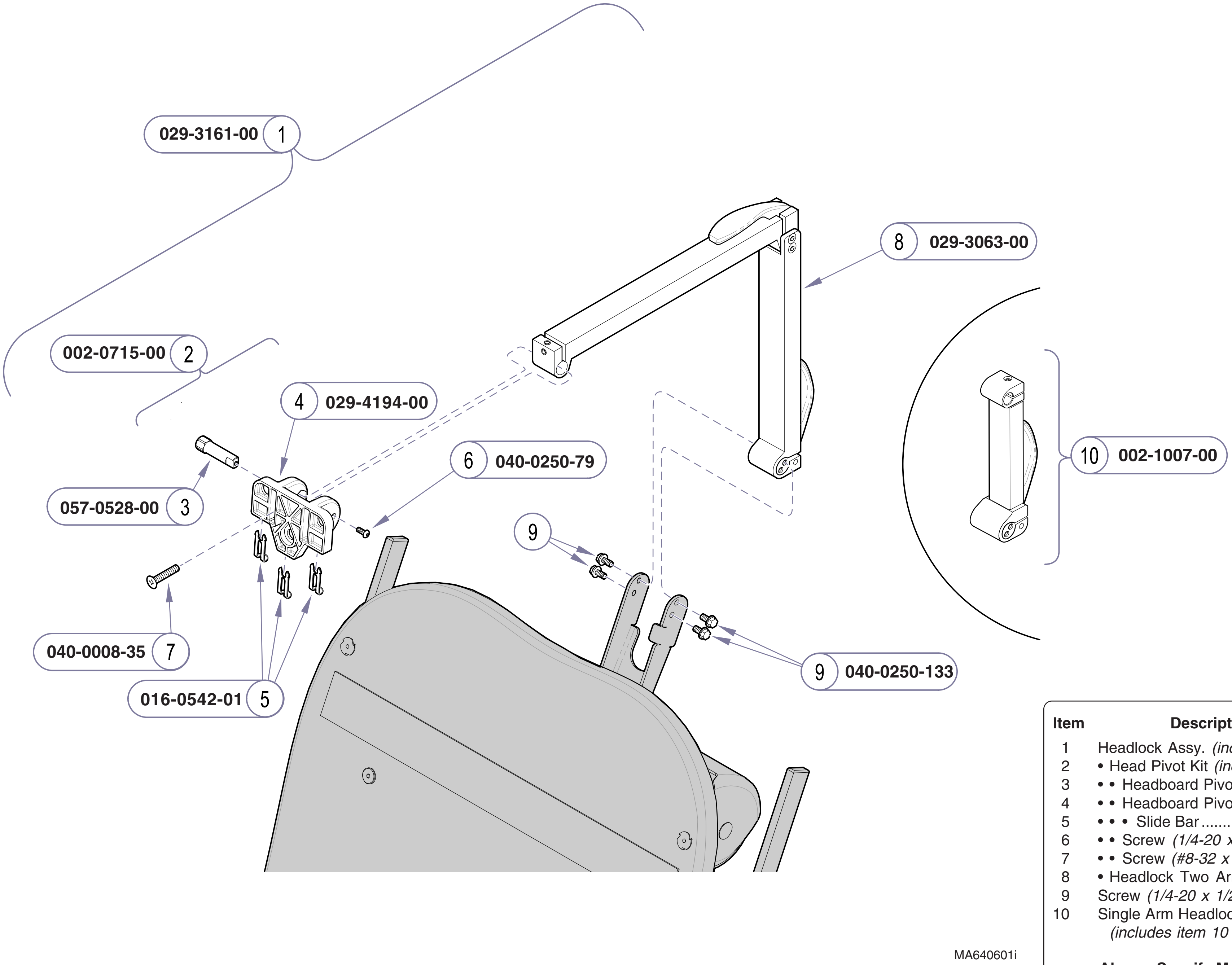
NOTE

Actuator kit includes the choke & a grounding harness (015-0737-22). The grounding harness is required on early models only.

Item	Description	Qty.
1	Velcro Hook *(2" x 20")*	1
2	Wood Insert T-Nut	4
3	Paper Roll Holder Kit *(includes items 4 thru 8)*	1
4	• Ratchet Rivet	4
5	• Cap	2
6	• Paper Roll Holder Lid	1
7	• Paper Roll Holder	1
8	• Screw *(#10-24 x 1" Phillips)*	4
9	Flange Bearing	4
10	E-ring	1
11	Hitch Pin Clip	1
12	Clevis Pin	1
13	Hole Plug	1
14	Spacer	4
15	Side Rail	2
16	Bolt *(3/8-16 x 3" Flathead Socket)*	*4*
17	Nut *(3/8-16)*	4
18	Flange Bearing	2
19	Shoulder Bolt *(5/8" x 3/4")*	2
20	Back Weldment	1
21	Groove Pin *(3/16" x 1/2")*	2
22	Set Screw	2
23	Back Actuator Kit *(see NOTE)*	1
24	Back Assembly Cover	1
25	Back Mounting Board *(includes all T-Nuts & velcro)*	1
26	JC Bolt *(1/4-20 x 1.575")*	*4*
27	Jam Nut (1/2"-13)	2
28	Washer, nylon	1

Always Specify Model & Serial Number

Models:	***230*** *(all)*	***75*** *(-019)*
Serial Numbers:	V185141 thru Present	V185141 thru Present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016-0542-01 5
8 029-3063-00
9
9 040-0250-133
10 002-1007-00
MA640601i

Item	Description	Qty.
1	Headlock Assy. *(includes items 2 thru 8)* ..	1
2	• Head Pivot Kit *(incl. items 3 thru 7)*	
3	• • Headboard Pivot Pin	1
4	• • Headboard Pivot Mount *(incl. item 5)*	1
5	• • • Slide Bar	3
6	• • Screw *(1/4-20 x 5/8)*	1
7	• • Screw *(#8-32 x 7/8 Flat Head)*	4
8	• Headlock Two Arm Assembly	1
9	Screw *(1/4-20 x 1/2 Hex Head)*	1
10	Single Arm Headlock Kit *(includes item 10 only)*	1

Always Specify Model & Serial Number

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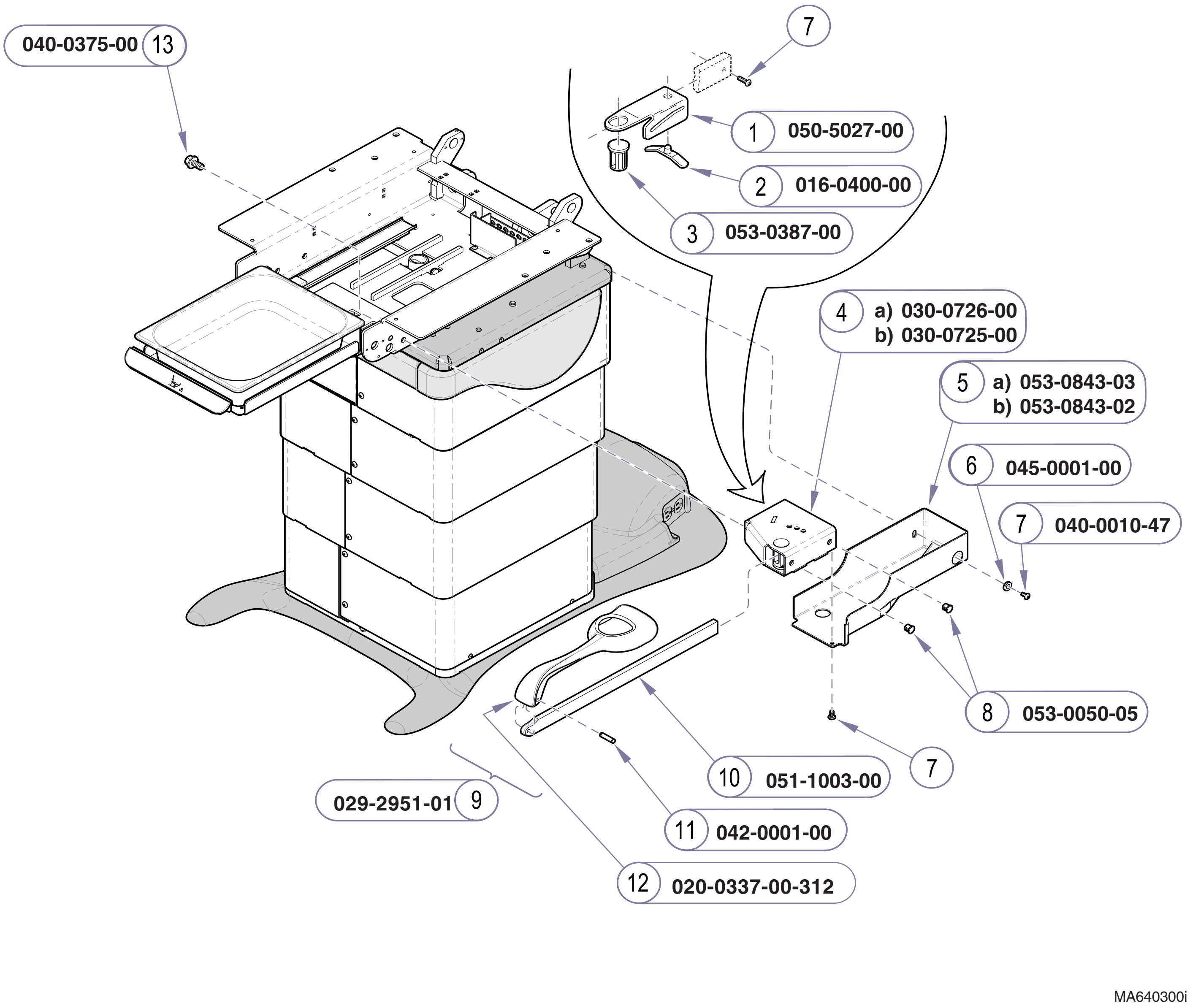
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b) 053-0843-02
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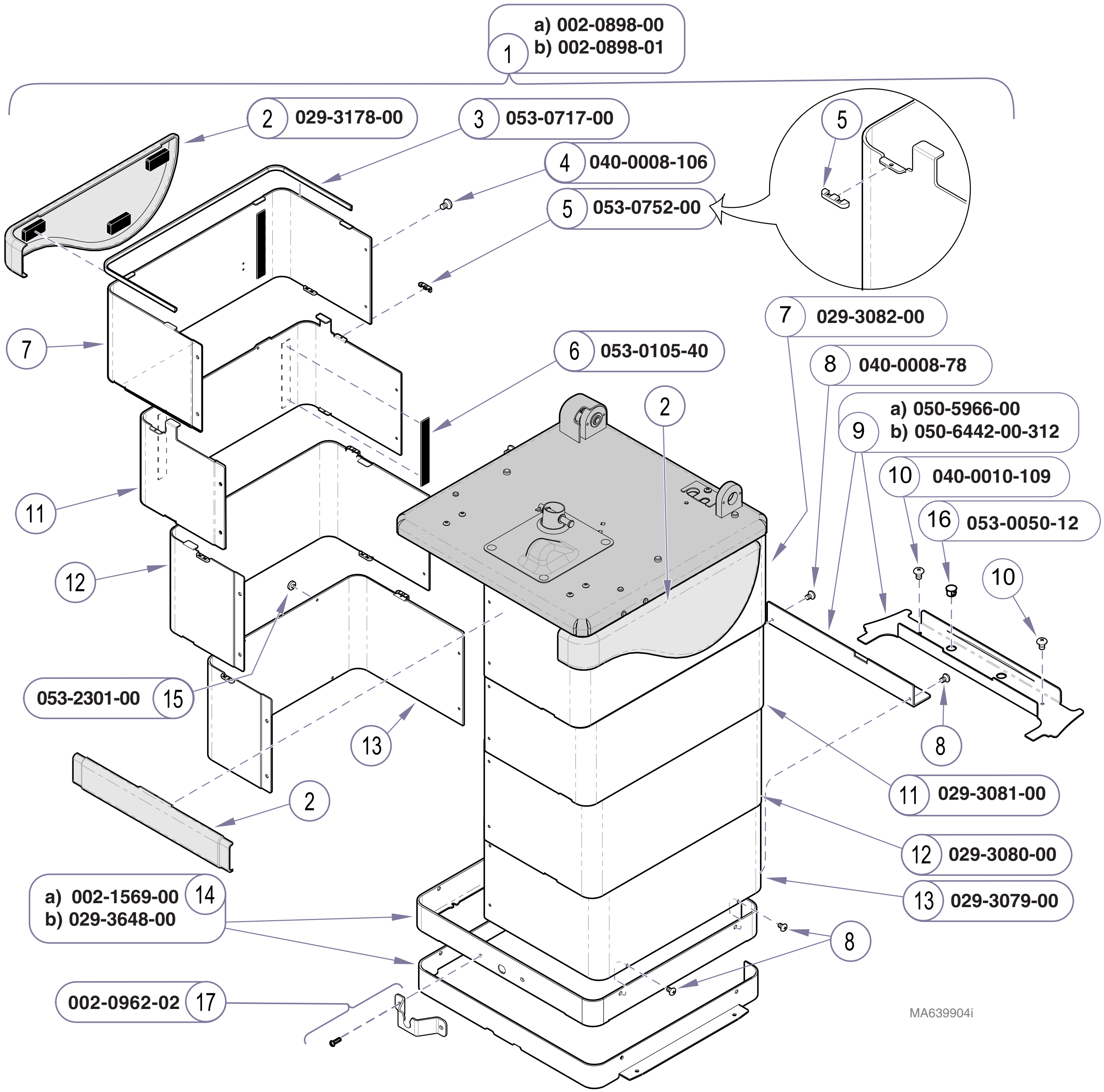
7 040-0010-47
8 053-0050-05
7
10 051-1003-00
029-2951-01 9
11 042-0001-00
12 020-0337-00-312
MA640300i

Item	Description	Qty.
1	Stirrup Guide Bracket	1
2	Stirrup Spring	2
3	Pivot Boss	2
4	Stirrup Mount:	
	a) *Left Side (shown)*	1
	b) *Right Side (not shown)*	1
5	Stirrup Housing:	
	a) *Left Side (shown)*	1
	b) *Right Side (not shown)*	1
6	Washer	2
7	Screw *(10-24 x 3/8" Phillips pan Head)*	6
8	Hole Plug	4
9	Stirrup Assembly *(incl. items 10 thru 12)*	2
10	• Stirrup Bar	1
11	• Roll Pin	1
12	• Stirrup	1
13	Bolt *(3/8-16 x 3/4")*	4

Always Specify Model & Serial Number

Models: ***ALL***
Serial Numbers: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12
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13
8
2
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a) 002-1569-00
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14
8
002-0962-02 17
MA639904i

NOTE:
Shroud assemblies include all Snap-on-Guides (item 5) and nutserts.

Item	Description	Qty.
1	Midmark Shroud Set *(incl. items 2 thru 16):*	
	a) *Standard base*	1
	b) *Rotational base*	1
2	• Cladding Set *(includes RH, LH, & front pieces)*	1
3	• Outer Shroud Seal	2
4	• Screw *(#8-32 x 1/4" truss head)*	10
5	• Snap-on-guide	24
6	• Velcro Loop	4
7	• Outer Shroud Assembly	2
8	• Screw *(#8-32 x 1/4" Pan Head)*	10
9	• Wire Harness Cover:	
	a) *Standard base*	1
	b) *Rotational base*	1
10	• Screw	2
11	• Middle Outer Shroud Assembly	2
12	• Middle Inner Shroud Assembly	2
13	• Inner Shroud	2
14	• Shroud Spacer:	
	a) *Standard base (incl. two #8-32 x 3/8" screws)*	1
	b) *Rotational base*	1
15	• Bumper	2
16	• Hole Plug	2
17	Control Cord Bracket Kit *(incl. bracket , two #8-32 x 3/8" screws, & two nuts)*	1

Always Specify Model & Serial Number

Base Shrouds:
Midmark Models

Models:	***630*** ***(all)***	***75*** ***(-020/-021)***
Serial Numbers:	All	All

Rev. (8/28/13)

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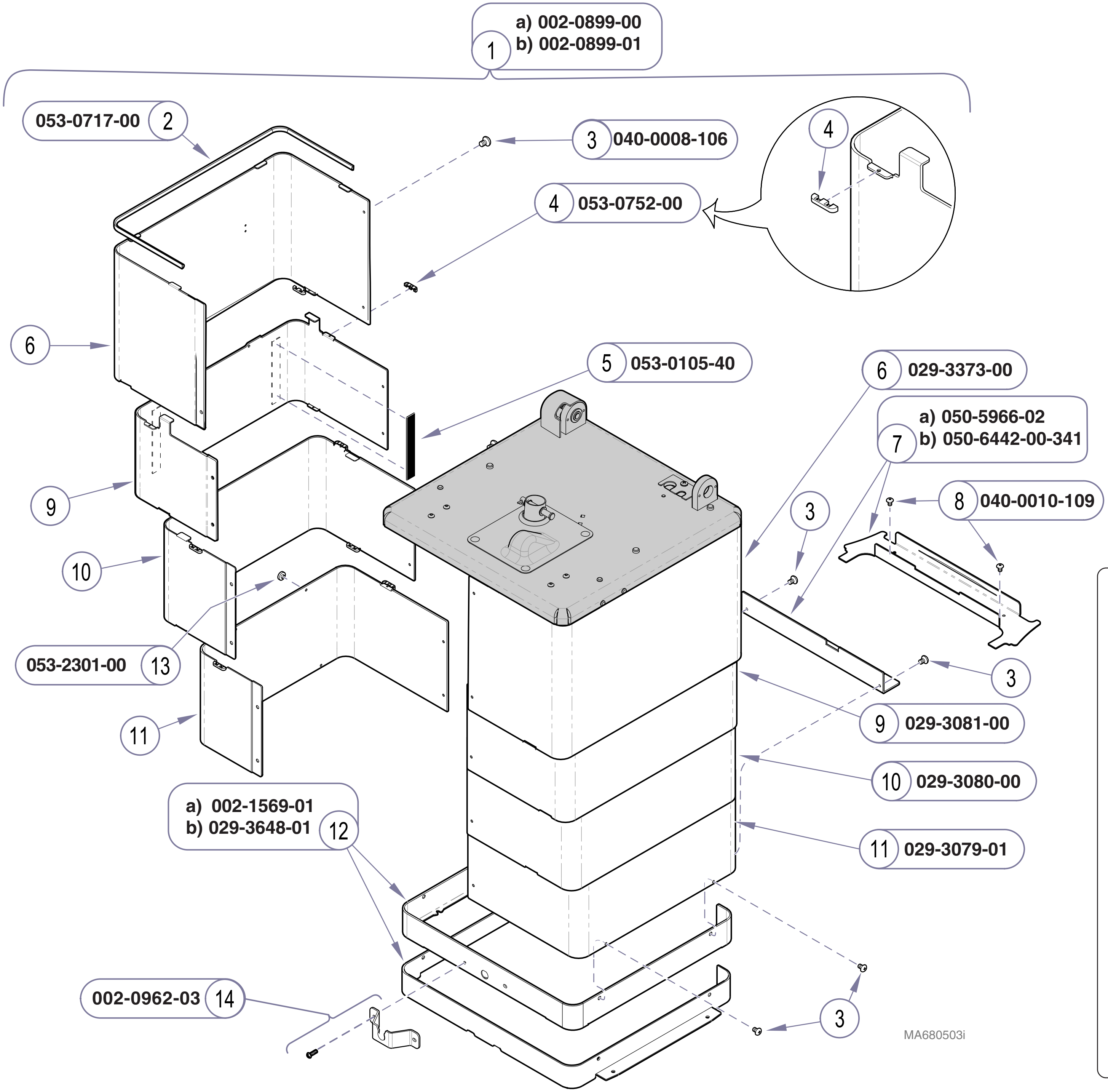
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002-0962-03
14
3
MA680503i

NOTE:
Shroud assemblies include all Snap-on-Guides (item 4) and nutserts.

Item	Description	Qty.
1	Ritter Shroud Set *(incl. items 2 thru 13):*	
	a) *Standard base*	1
	b) *Rotational base*	1
2	• Outer Shroud Seal	2
3	• Screw *(#8-32 x 1/4" truss head)*	22
4	• Snap-on-guide	24
5	• Velcro Loop	4
6	• Outer Shroud Assembly	2
7	• Wire Harness Cover:	
	a) *Standard base*	1
	b) *Rotational base*	1
8	• Screw	2
9	• Middle Outer Shroud Assembly	2
10	• Middle Inner Shroud Assembly	2
11	• Inner Shroud	2
12	• Shroud Spacer:	
	a) *Standard base (incl. two #8-32 x 3/8" screws)*	1
	b) *Rotational base*	1
13	• Bumper	2
14	Control Cord Bracket Kit *(incl. bracket , two #8-32 x 3/8" screws, & two nuts)*	1

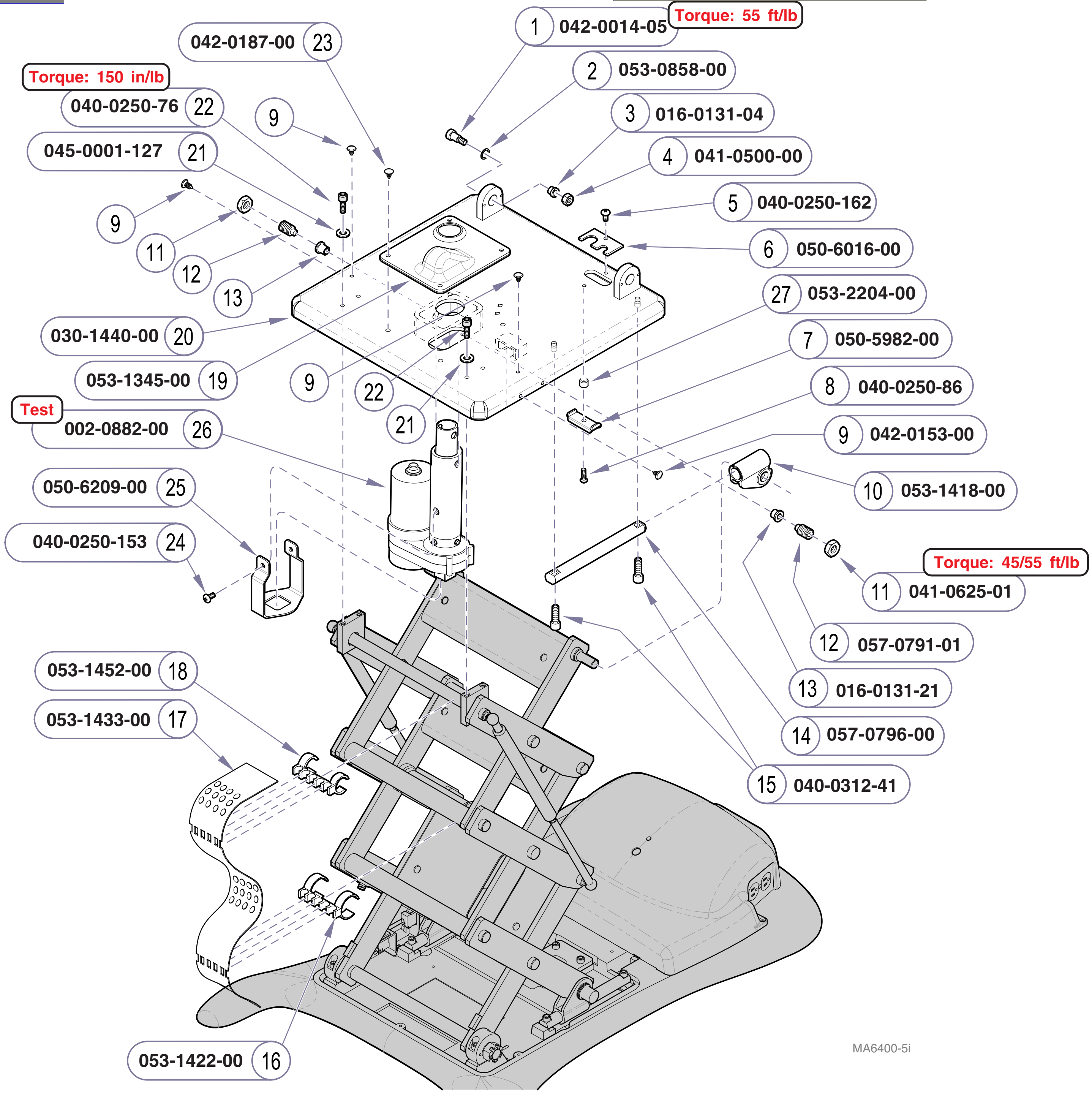
Always Specify Model & Serial Number

Models:	***230*** *(all)*	***75*** *(-019)*
Serial Numbers:	All	All

Base Shrouds:
Ritter Models

Refer To: **Go To Page:**

Tilt Actuator Test B-20


1 042-0014-05
Torque: 55 ft/lb
23 042-0187-00
Torque: 150 in/lb
22 040-0250-76
2 053-0858-00
3 016-0131-04
4 041-0500-00
21 045-0001-127
9
5 040-0250-162
9
11
12
13
6 050-6016-00
27 053-2204-00
20 030-1440-00
19 053-1345-00
9
22
7 050-5982-00
8 040-0250-86
Test
26 002-0882-00
21
9 042-0153-00
25 050-6209-00
10 053-1418-00
24 040-0250-153
Torque: 45/55 ft/lb
11 041-0625-01
12 057-0791-01
13 016-0131-21
18 053-1452-00
14 057-0796-00
17 053-1433-00
15 040-0312-41
MA6400-5i
16 053-1422-00

Item	Description	Qty.
1	Shoulder Bolt *(5/8" x 3/4")*	2
2	Washer, *nylon*	1
3	Flange Bearing	2
4	Jam Nut *(1/2"-13)*	2
5	Screw *(1/4-20 x 1/2" Phillips)*	1
6	Corrugated Tubing Bracket	1
7	Cable Restraint Clamp	1
8	Screw *(1/4-20 x 3/4" Phillips Head)*	1
9	Rivot Drive	6
10	Upper Glide	2
11	Jam Nut *(5/8" x 11)*	2
12	Pivot Screw	2
13	Brass Bushing	2
14	Guide Bar	2
15	Cap Screw *(5/16-18 1" Socket Head)*	4
16	Lower Wire Clamp	2
17	Wire Ribbon Guide	1
18	Upper Wire Clamp	2
19	Screw Tip Cover	1
20	Column Adaptor Weldment	1
21	Washer	4
22	Cap Screw *(1/4-20 x 3/8" Socket Head)* *(Note: apply permanent thread adhesive)*	4
23	Barbed Push Fastener	4
	NOTE: Items 24 & 25 used on Ritter models only	
24	Screw *(8-32 x 1/4")*	*2*
25	Support Strap	1
26	Tilt Actuator *(includes choke)*	1
27	Spacer	1

Always Specify Model & Serial Number

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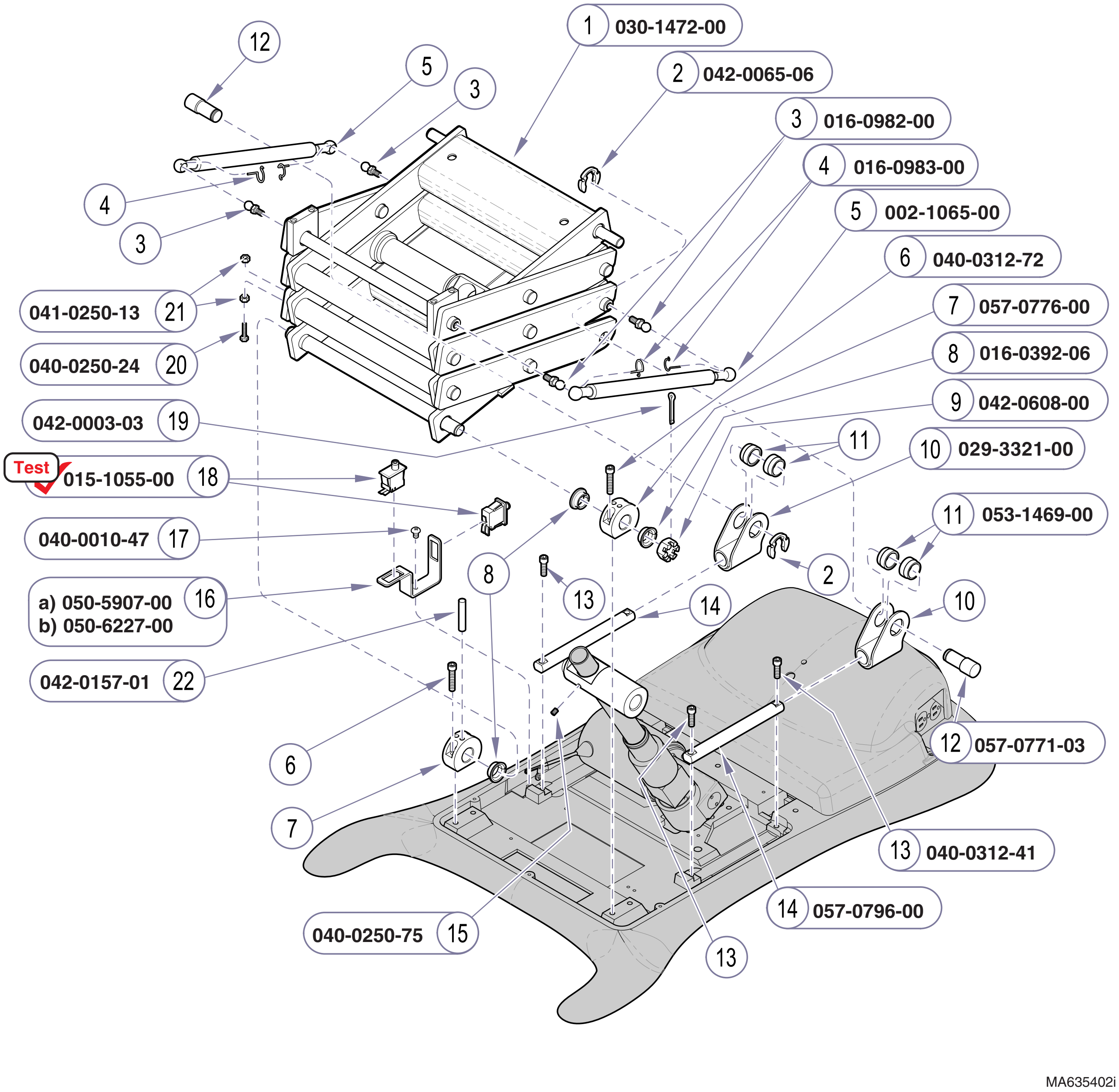
Limit Switch Test B-4


1 030-1472-00
12
5
3
2 042-0065-06
3 016-0982-00
4 016-0983-00
5 002-1065-00
4
3
6 040-0312-72
041-0250-13 21
7 057-0776-00
040-0250-24 20
8 016-0392-06
9 042-0608-00
042-0003-03 19
11
10 029-3321-00
Test
015-1055-00 18
11 053-1469-00
040-0010-47 17
8
2
13
14
10
a) 050-5907-00
b) 050-6227-00 16
042-0157-01 22
12 057-0771-03
6
7
13 040-0312-41
14 057-0796-00
040-0250-75 15
13
MA635402i

Item	Description	Qty.
1	Scissors Assembly	1
2	Clip Ring *(3/4")*	2
3	Gas Spring Ball Stud	4
4	Gas Spring Ball Clip	4
5	Gas Spring Kit *(incl. two gas springs & four ball clips)*	1
6	Bolt *(5/16-18 x 1-1/2")* socket head cap	4
7	Main Bearing Housing	2
8	Flange Bearing	3
9	Slotted Nut	1
10	Slide Weldment *(incl. item 11)*	2
11	• Bearing Insert	2
12	Guide Shaft	2
13	Bolt *(5/16-18 x 1")* socket head cap	4
14	Guide Bar	2
15	Set Screw	1
16	Limit Switch Bracket:	
	a) *Midmark models*	1
	b) *Ritter models*	1
17	Screw *(10-32 x 3/8")*	1
18	Limit Switch	2
19	Cotter Pin	1
20	Limit Switch Actuator Bolt *(1/4-20 x 1")*	1
21	Nut *(1/4-20)*	2
22	Stop Pin *(Ritter models only)*	2
23	Snap Ring	1

Always Specify Model & Serial Number

Models:	***230*** *(all)*	***630*** *(all)*	***75*** *(-019 / -020 / -021)*
Serial Numbers:	V1000 thru V109445	V1000 thru V109444	V1000 thru V109444

Scissor Components

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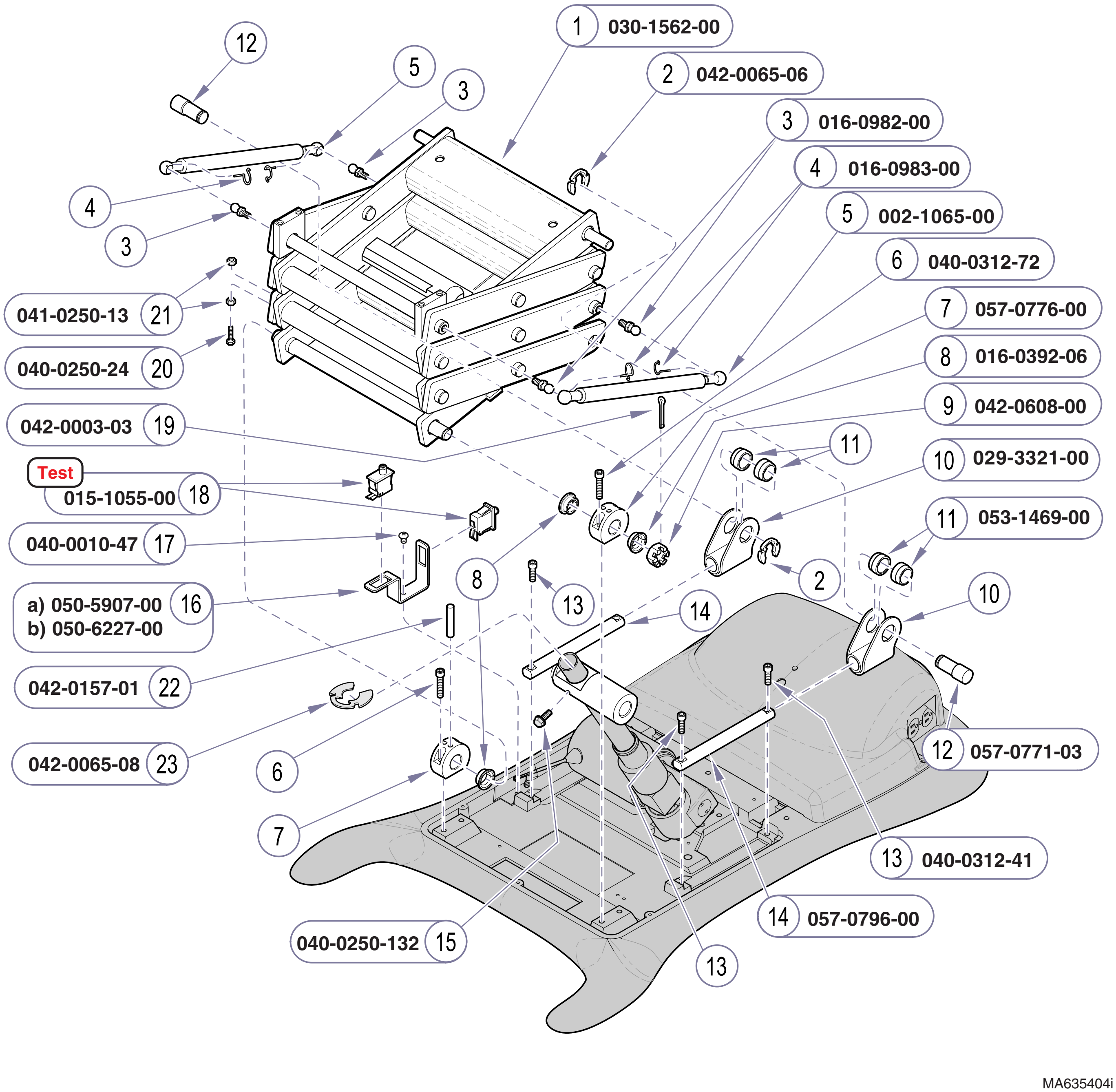
Limit Switch Test........................ B-4

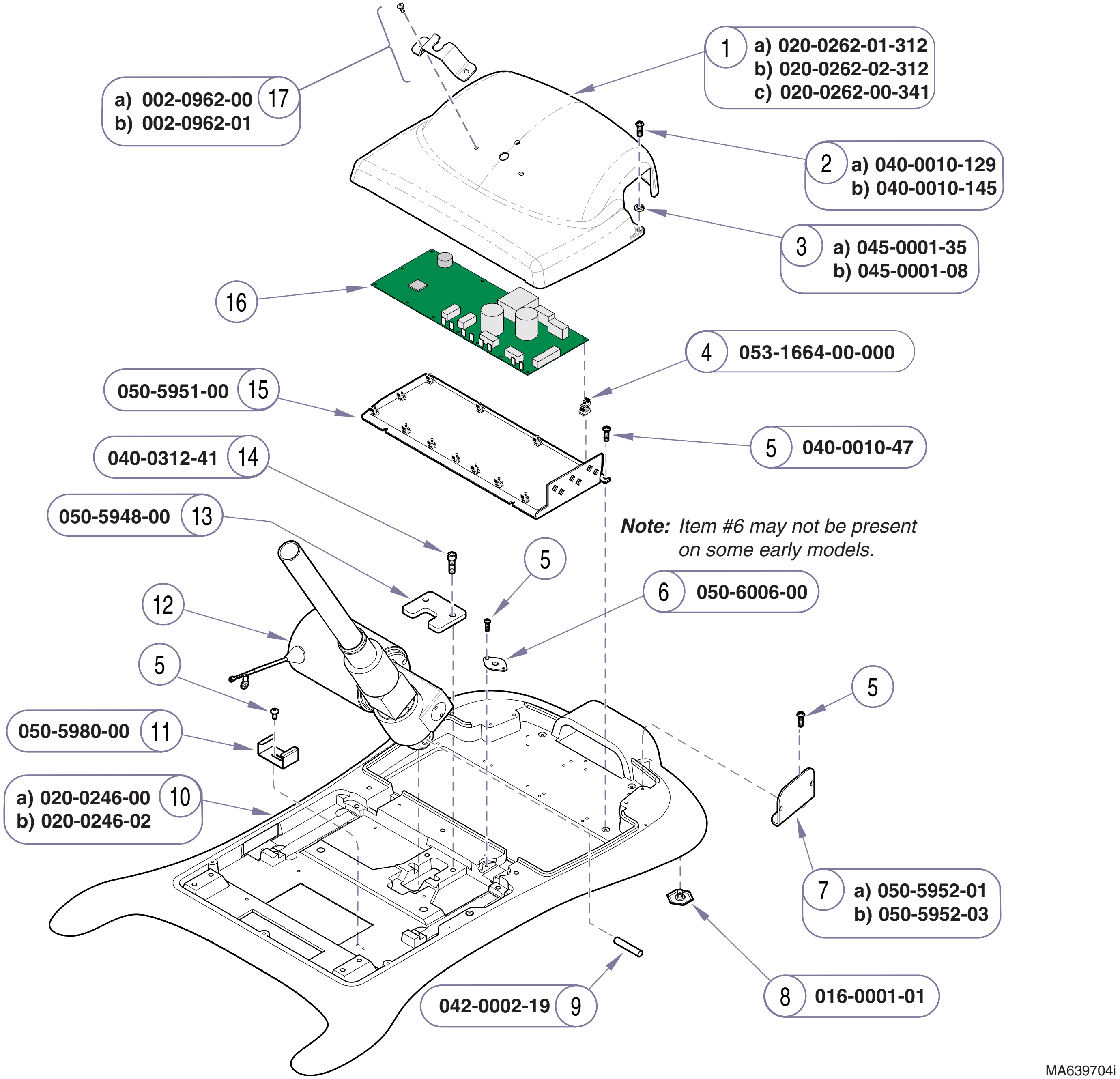

1 030-1562-00
2 042-0065-06
3 016-0982-00
4 016-0983-00
5 002-1065-00
6 040-0312-72
7 057-0776-00
8 016-0392-06
9 042-0608-00
10 029-3321-00
11 053-1469-00
12 057-0771-03
13 040-0312-41
14 057-0796-00
15 040-0250-132
16 a) 050-5907-00 b) 050-6227-00
17 040-0010-47
18 015-1055-00
Test
19 042-0003-03
20 040-0250-24
21 041-0250-13
22 042-0157-01
23 042-0065-08
12
5
3
4
3
11
2
10
8
13
14
6
7
13
MA635404i

Item	Description	Qty.
1	Scissors Assembly	1
2	Clip Ring *(3/4")*	2
3	Gas Spring Ball Stud	4
4	Gas Spring Ball Clip	4
5	Gas Spring Kit *(incl. two gas springs & four ball clips)*	1
6	Bolt *(5/16-18 x 1-1/2")* socket head cap	4
7	Main Bearing Housing	2
8	Flange Bearing	3
9	Slotted Nut	1
10	Slide Weldment *(incl. item 11)*	2
11	• Bearing Insert	2
12	Guide Shaft	2
13	Bolt *(5/16-18 x 1")* socket head cap	4
14	Guide Bar	2
15	Hex Bolt *(1/4-20 x 3/8")*	1
16	Limit Switch Bracket:	
	a) *Midmark models*	1
	b) *Ritter models*	1
17	Screw *(10-32 x 3/8")*	1
18	Limit Switch	2
19	Cotter Pin	1
20	Limit Switch Actuator Bolt *(1/4-20 x 1")*	1
21	Nut *(1/4-20)*	2
22	Stop Pin *(Ritter models only)*	2
23	Klip Ring	1

Always Specify Model & Serial Number

Models: ***Serial Numbers:***	***230*** *(all)* V109946 thru present	***630*** *(all)* V109445 thru present	***75*** *(-019 / -020 / -021)* V109445 thru present

Refer To: **Go To Page:**
Base Actuator E-24*
Electrical Components E-23
** multiple pages due to model / serial # break*


1 a) 020-0262-01-312
b) 020-0262-02-312
c) 020-0262-00-341
17 a) 002-0962-00
b) 002-0962-01
2 a) 040-0010-129
b) 040-0010-145
3 a) 045-0001-35
b) 045-0001-08
16
4 053-1664-00-000
15 050-5951-00
14 040-0312-41
5 040-0010-47
13 050-5948-00
5
6 050-6006-00
12
5
5
11 050-5980-00
10 a) 020-0246-00
b) 020-0246-02
7 a) 050-5952-01
b) 050-5952-03
9 042-0002-19
8 016-0001-01
MA639704i

Note: *Item #6 may not be present on some early models.*

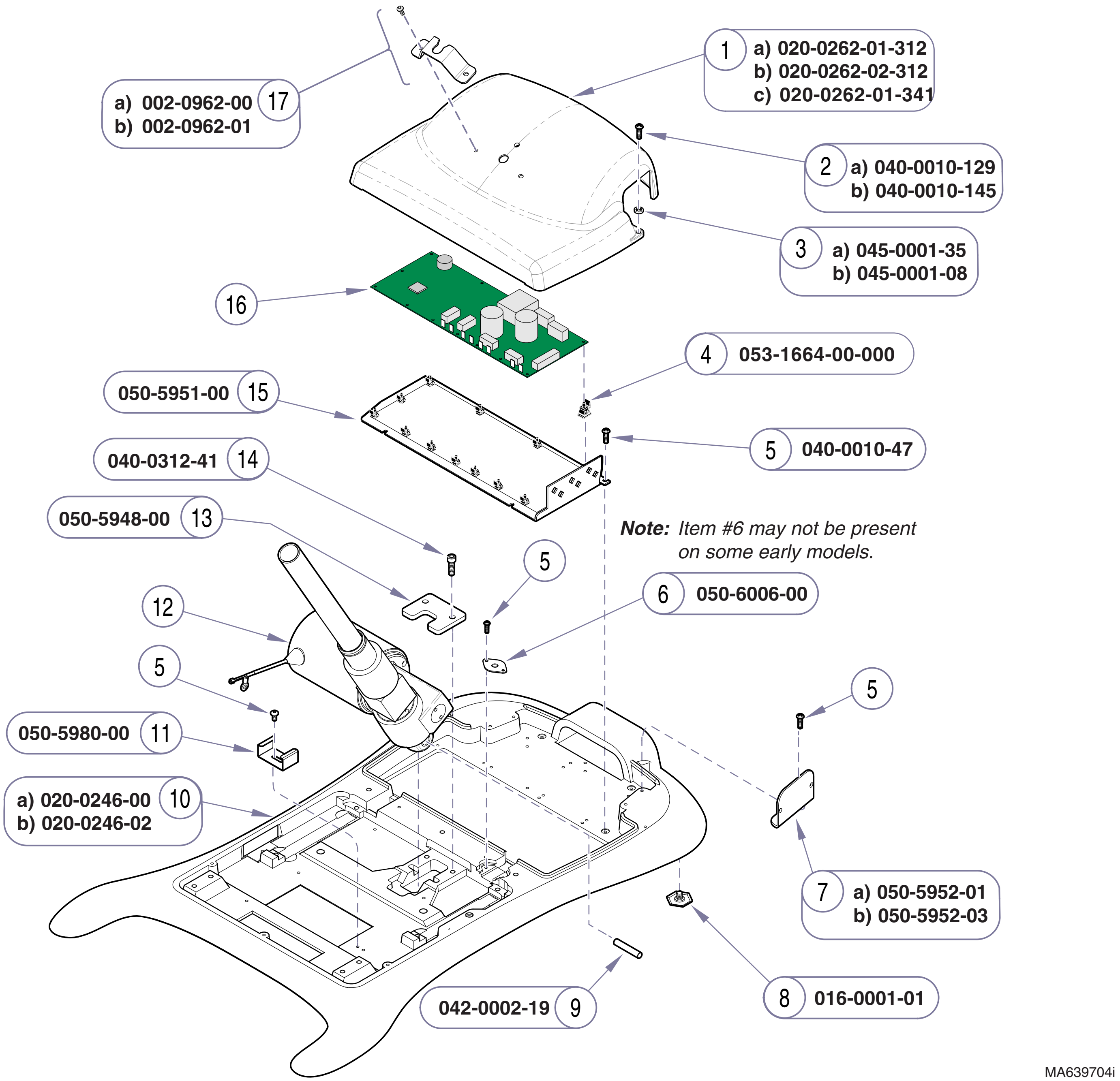
Item	Description	Qty.
1	PC Board Cover:	
	a) *Midmark models (w/o uph. heater)*	1
	b) *Midmark models (w/ uph. heater)*	1
	c) *Ritter models*	1
2	Screw *(10-24 x.37"):*	
	a) *Midmark models*	2
	b) *Ritter models*	2
3	Lock Washer:	
	a) *Midmark models*	3
	b) *Ritter models*	3
4	PC Board Standoff	12
5	Screw *(10-24 x 3/8" Phillips)*	15
6	Grounding Plate	1
7	Cover Plate *(models w/o receptacles):*	
	a) *Midmark models*	2
	b) *Ritter models*	2
8	Leveling Feet	4
9	Dowel Pin	1
10	Base Casting:	
	a) *Midmark models*	1
	b) *Ritter models*	1
11	Harness Clip	1
12	*Refer to: "Base Actuator"*	Ref
13	Retaining Plate	1
14	Bolt *(5/16-18 x 1" Socket Head)*	2
15	Base Plate	1
16	Refer to: *"Electrical Components"*	Ref
17	Control Cord Bracket Kit *(incl. screws)*:	
	a) *Midmark models*	1
	b) *Ritter models*	1

Always Specify Model & Serial Number

Models:	***230** (all)*	***630** (all)*	***75** (-019 / -020 / -021)*
Serial Numbers:	V1000 thru V370643	V1000 thru V370643	V1000 thru V370643

Refer To:	**Page**
Base Actuator	E-24*
Electrical Components	E-23

** multiple pages due to model / serial # break*



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2 a) 040-0010-129 b) 040-0010-145
3 a) 045-0001-35 b) 045-0001-08
4 053-1664-00-000
5 040-0010-47
6 050-6006-00
7 a) 050-5952-01 b) 050-5952-03
8 016-0001-01
9 042-0002-19
10 a) 020-0246-00 b) 020-0246-02
11 050-5980-00
12
13 050-5948-00
14 040-0312-41
15 050-5951-00
16
17 a) 002-0962-00 b) 002-0962-01
5
5
5
MA639704i

Note: *Item #6 may not be present on some early models.*

Item	Description	Qty.
1	PC Board Cover:	
	a) *Midmark models (w/o uph. heater)*	1
	b) *Midmark models (w/ uph. heater)*	1
	c) *Ritter models*	1
2	Screw *(10-24 x.37"):*	
	a) *Midmark models*	2
	b) *Ritter models*	2
3	Lock Washer:	
	a) *Midmark models*	3
	b) *Ritter models*	3
4	PC Board Standoff	12
5	Screw *(10-24 x 3/8" Phillips)*	15
6	Grounding Plate	1
7	Cover Plate *(models w/o receptacles):*	
	a) *Midmark models*	2
	b) *Ritter models*	2
8	Leveling Feet	4
9	Dowel Pin	1
10	Base Casting:	
	a) *Midmark models*	1
	b) *Ritter models*	1
11	Harness Clip	1
12	*Refer to: "Base Actuator"*	Ref
13	Retaining Plate	1
14	Bolt *(5/16-18 x 1" Socket Head)*	2
15	Base Plate	1
16	Refer to: *"Electrical Components"*	Ref
17	Control Cord Bracket Kit *(incl. screws)*:	
	a) *Midmark models*	1
	b) *Ritter models*	1

Always Specify Model & Serial Number

Base Section Components

Models: ***Serial Numbers:***	***230** (all)* V370644 thru Present	***630** (all)* V370644 thru Present	***75** (-019 / -020 / -021)* V370644 thru Present

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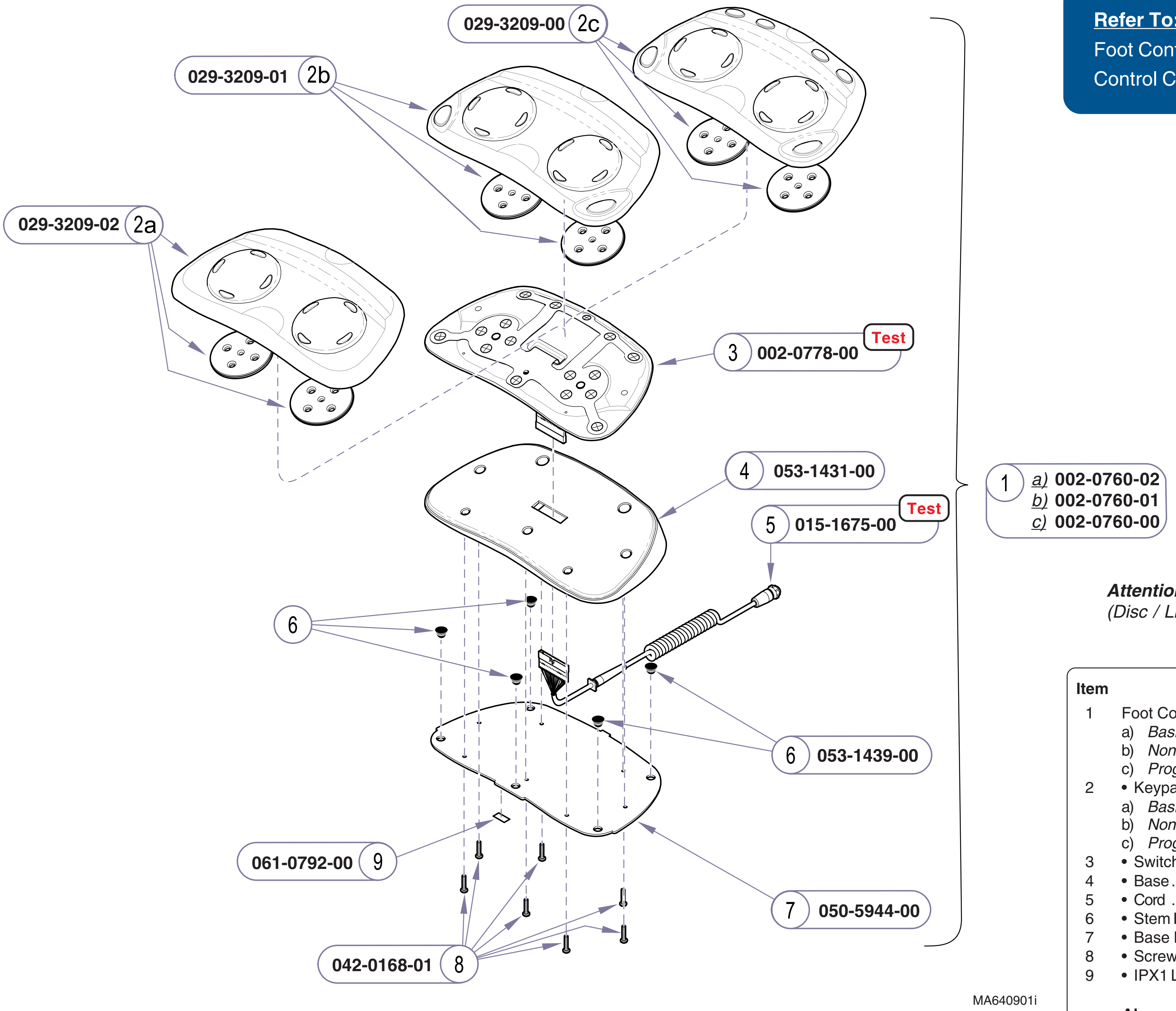
Control Cord Continuity Test B-7


029-3209-00 2c
029-3209-01 2b
029-3209-02 2a
3 002-0778-00 Test
4 053-1431-00
5 015-1675-00 Test
1 a) 002-0760-02
b) 002-0760-01
c) 002-0760-00
6
6 053-1439-00
7 050-5944-00
061-0792-00 9
042-0168-01 8
MA640901i

Attention: *Verify foot control style (Disc / Linear) when ordering parts.*

Item	Description	Qty.
1	Foot Control Assy. *(incl. items 2 thru 9)*:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630 / 75-020)*	1
	c) *Programmable (630 / 75-021)*	1
2	• Keypad Assembly:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630 / 75-020)*	1
	c) *Programmable (630 / 75-021)*	1
3	• Switch Membrane Kit	1
4	• Base	1
5	• Cord	1
6	• Stem Bumper	5
7	• Base Plate	1
8	• Screw *(3.5-1.57 x 16)*	7
9	• IPX1 Label	1

Always Specify Model & Serial Number

Foot Control
(Disc-Style)

Models: ***Serial Numbers:***	***230*** ***(all)*** V1000 thru V370643	***630*** ***(all)*** V1000 thru V370643	***75*** ***(-019 / -020 / -021)*** V1000 thru V370643

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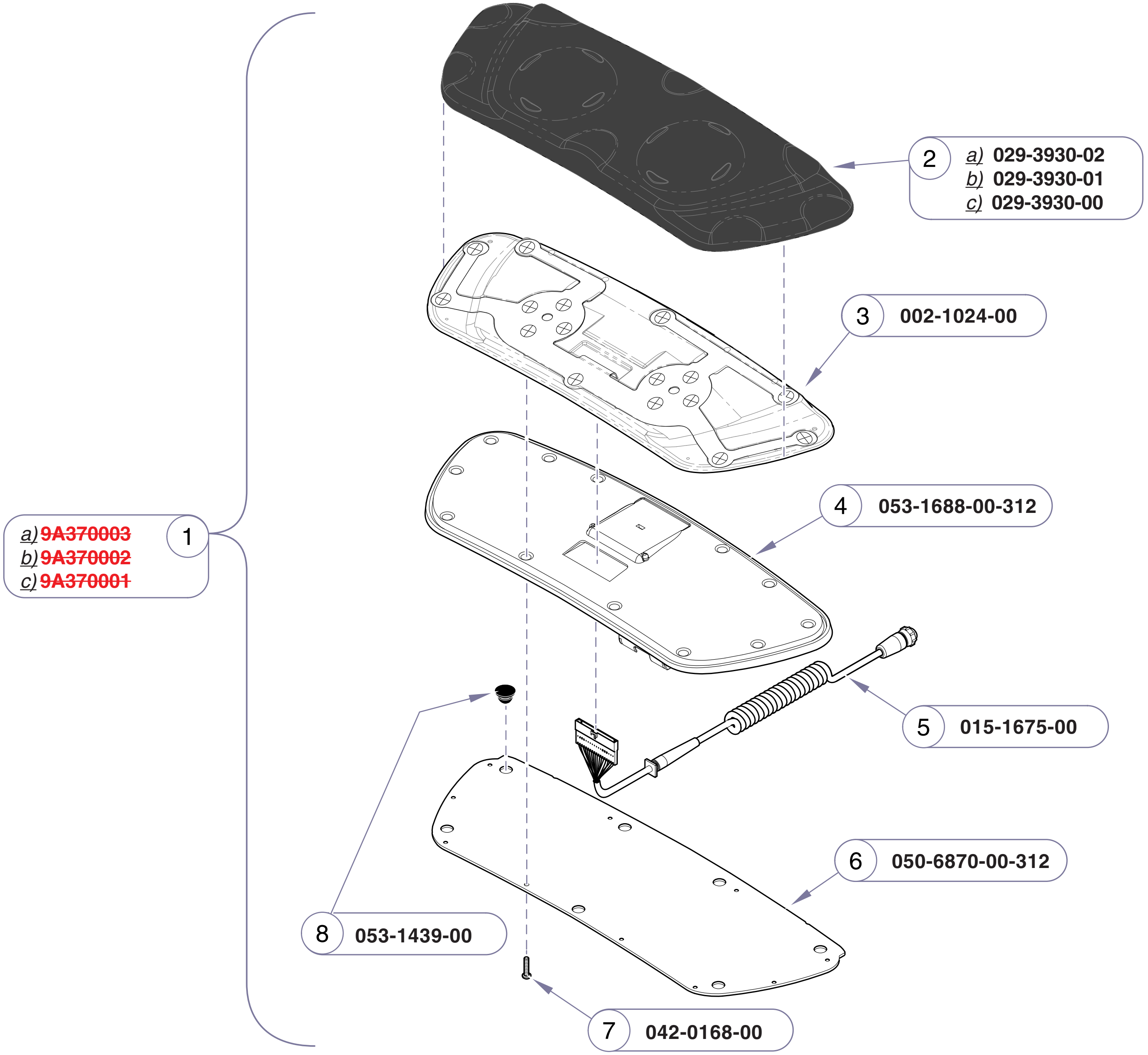
Control Cord Continuity Test B-7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a) ~~9A370003~~
b) ~~9A370002~~
c) ~~9A370001~~
2
a) 029-3930-02
b) 029-3930-01
c) 029-3930-00
3 002-1024-00
4 053-1688-00-312
5 015-1675-00
6 050-6870-00-312
7 042-0168-00
8 053-1439-00

Attention: *Verify foot control style (Disc / Linear) when ordering parts.*

Item	Description	Qty.
1	Disc-Style Foot Control Assembly *(includes items 2 thru 9)*:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630 / 75-020)*	1
	c) *Programmable (630 / 75-021)*	1
2	• Keypad Assembly:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630 / 75-020)*	1
	c) *Programmable (630 / 75-021)*	1
3	• Switch Membrane Kit	1
4	• Base	1
5	• Cord	1
6	• Base Plate	1
7	• Screw *(3.5mm x 10mm)*	10
8	• Stem Bumper	5
9	• IPX1 Label	1

Always Specify Model & Serial Number

Models: ***This accessory foot control is compatible with all Ritter / Midmark models.***

Serial Numbers:

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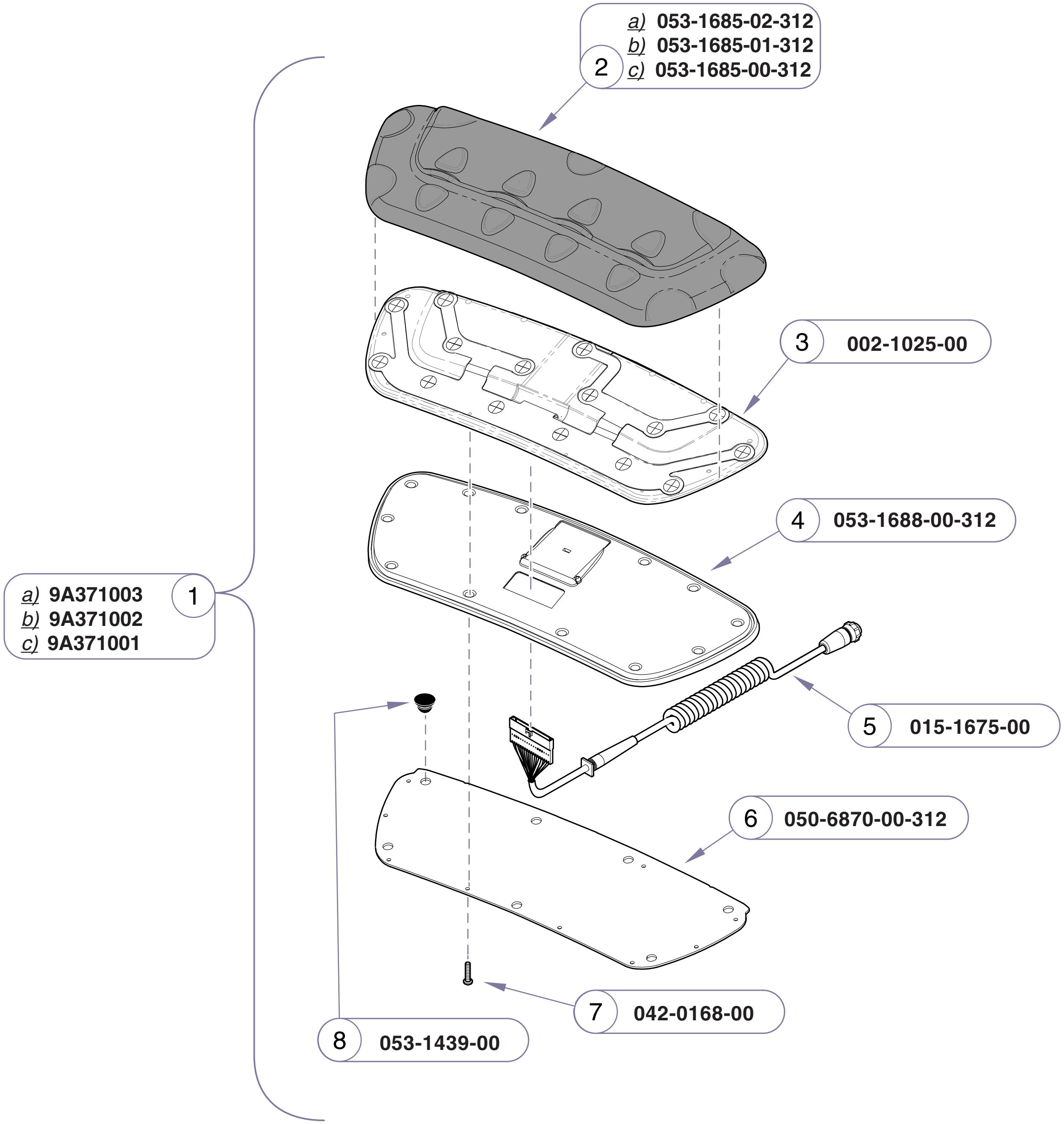
Control Cord Continuity Test	B-7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2
c) 053-1685-00-312
3
002-1025-00
4
053-1688-00-312
a) 9A371003
1
b) 9A371002
c) 9A371001
5
015-1675-00
6
050-6870-00-312
7
042-0168-00
8
053-1439-00

Attention: *Verify foot control style (Disc / Linear) when ordering parts.*

Item	Description	Qty.
1	Linear-Style Foot Control Assembly *(includes items 2 thru 9)*:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630/75-020)*	1
	c) *Programmable (630/75-021)*	1
2	• Keypad Assembly:	
	a) *Basic (230 / 75-019)*	1
	b) *Non-Programmable (630/75-020)*	1
	c) *Programmable (630/75-021)*	1
3	• Switch Membrane Kit	1
4	• Base	1
5	• Cord	1
6	• Base Plate	1
7	• Screw *(3.5 mm x 10mm)*	10
8	• Stem Bumper	7
9	• IPX1 Label *(not shown)*	1

Always Specify Model & Serial Number

NOTE: *This foot control comes standard with the model / serial numbers listed below.*
It may also be used as a direct replacement for any other foot control (Ritter / Midmark).

Models: ***630*** ***(all)***
Serial Numbers: V370644 thru present

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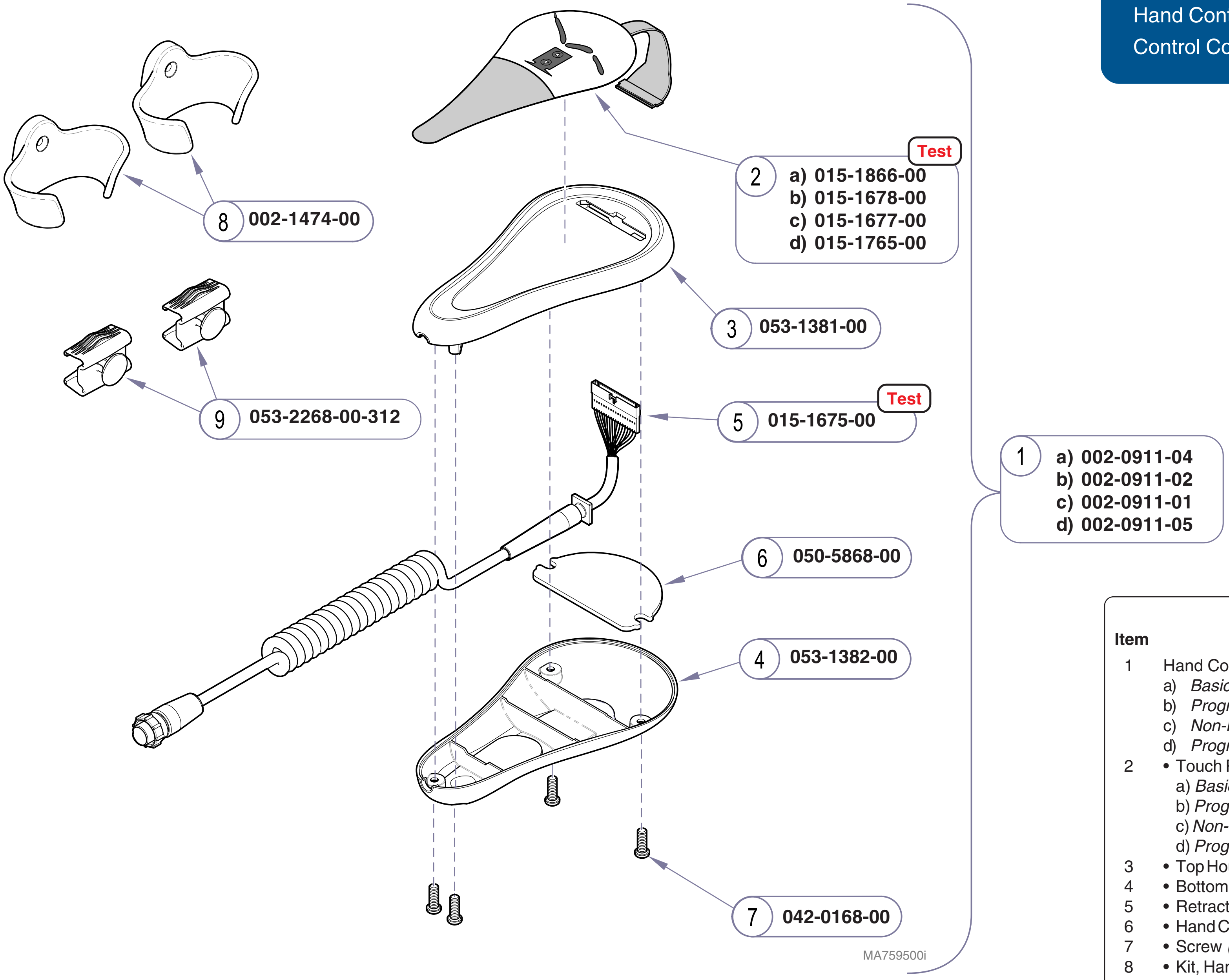
Hand Control Test Test B-6

Control Cord Continuity Test B-7


8 002-1474-00
9 053-2268-00-312
Test
2 a) 015-1866-00
b) 015-1678-00
c) 015-1677-00
d) 015-1765-00
3 053-1381-00
Test
5 015-1675-00
1 a) 002-0911-04
b) 002-0911-02
c) 002-0911-01
d) 002-0911-05
6 050-5868-00
4 053-1382-00
7 042-0168-00
MA759500i

Item	Description	Qty.
1	Hand Control Assy. *(incl. items 2 thru 8)*	
	a) *Basic (230 / 75-019)*	1
	b) *Programmable (630/75-021)*	1
	c) *Non-Programmable (630/75-020)*	1
	d) *Programmable w/Htd Uph. (630)*	1
2	• Touch Pad*:*	
	a) *Basic (230 / 75-019)*	1
	b) *Programmable (630/75-021)*	1
	c) *Non-Programmable (630/75-020)*	1
	d) *Programmable w/Htd Uph. (630)*	1
3	• Top Housing	1
4	• Bottom Housing	1
5	• Retractable Cord Assembly	1
6	• Hand Control Weight	1
7	• Screw *(3.5 x 10)*	4
8	• Kit, Hand Control Holsters *(Includes Item 9)*	1
9	• • Siderail Hand Control Brackets	2

Always Specify Model & Serial Number

Models: ***ALL***
Serial Numbers:

Rev. (7/29/14)

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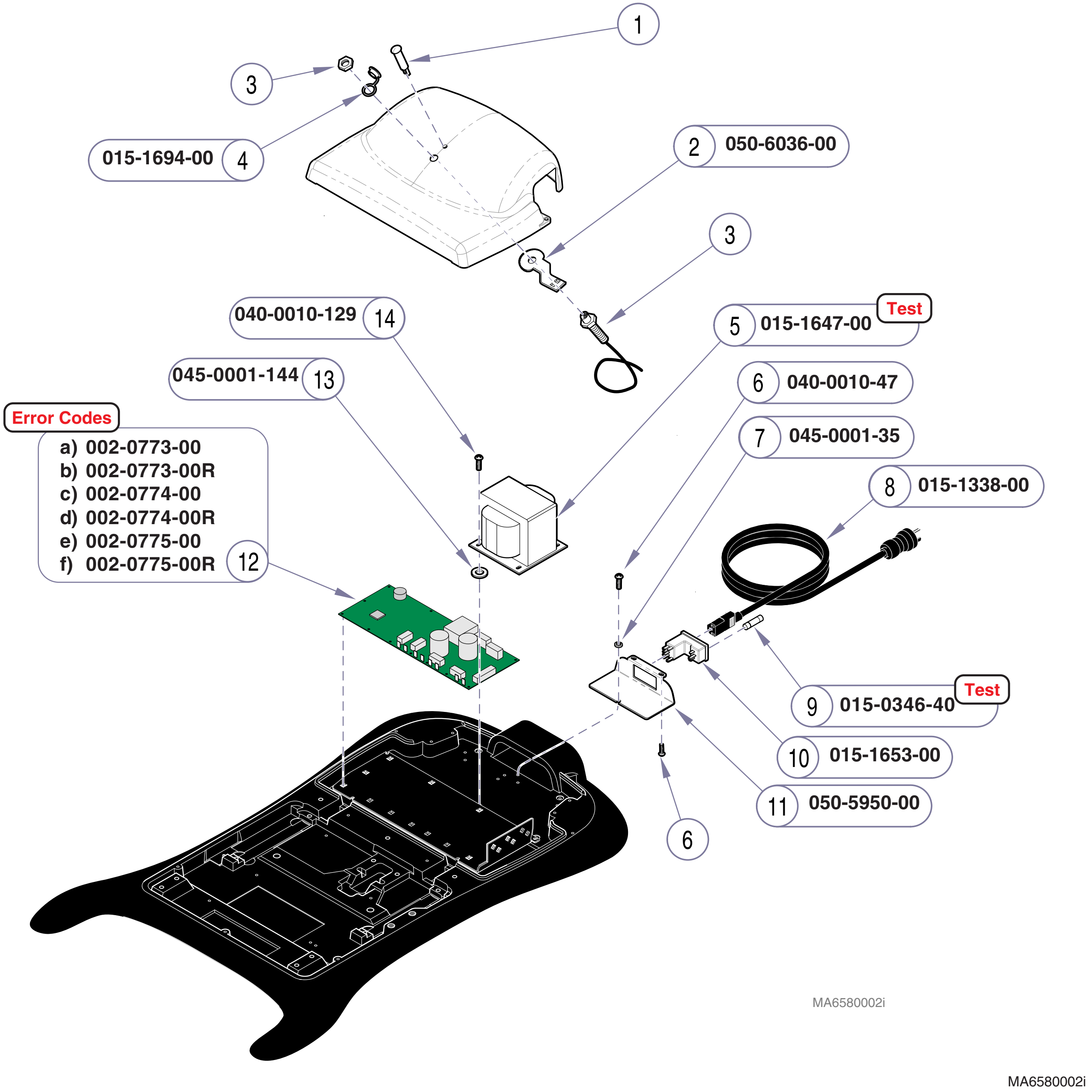
Primary Fuse Test B-2
Main System Transformer Test . B-30
Main PC Board - Error Codes B-40
Section D - Wiring Diagrams D-1


1
3
015-1694-00 4
2 050-6036-00
3
040-0010-129 14
5 015-1647-00
Test
045-0001-144 13
6 040-0010-47
Error Codes
a) 002-0773-00
b) 002-0773-00R
c) 002-0774-00
d) 002-0774-00R
e) 002-0775-00
f) 002-0775-00R
12
7 045-0001-35
8 015-1338-00
9 015-0346-40
Test
10 015-1653-00
11 050-5950-00
6
MA6580002i
MA6580002i

Item	Description	Qty.
1	Power Indicator Light *w/wire harness* *(Refer to Section D)*	Ref
	NOTE: Items 2 thru 4 used on Midmark models only	
2	Cable Holder	1
3	Connection Port / Harness *(includes nut)* *(Refer to Section D - Wiring Diagrams)*	Ref
4	Dust Cap	1
5	Main System Transformer	1
6	Screw *(10-24 x 3/8" Phillips)*	3
7	Lockwasher	1
8	Power Cord *(N. American, 120 VAC, 8 ft)* *Note: Export models require 9A152 International Cordsets.*	1
9	Fuse *(6.3 A, 250 V, Type "T", 5 x 20mm)*	2
10	Power Inlet	1
11	Inlet Plate	1
12	PC Board:	
	a) *Basic (230/75-019)*	1
	b) *Basic (230 [Refurbished])*	1
	c) *Non-Programmable (630/75-020)*	1
	d) *Non-Programmable (630 [Refurbished])*	1
	e) *Programmable (630/75-021)*	1
	f) *Programmable (630 [Refurbished])*	1
13	Rubber Washer	4
14	Screw *(10-24 x 1/2" Phillips)*	4

Always Specify Model & Serial Number

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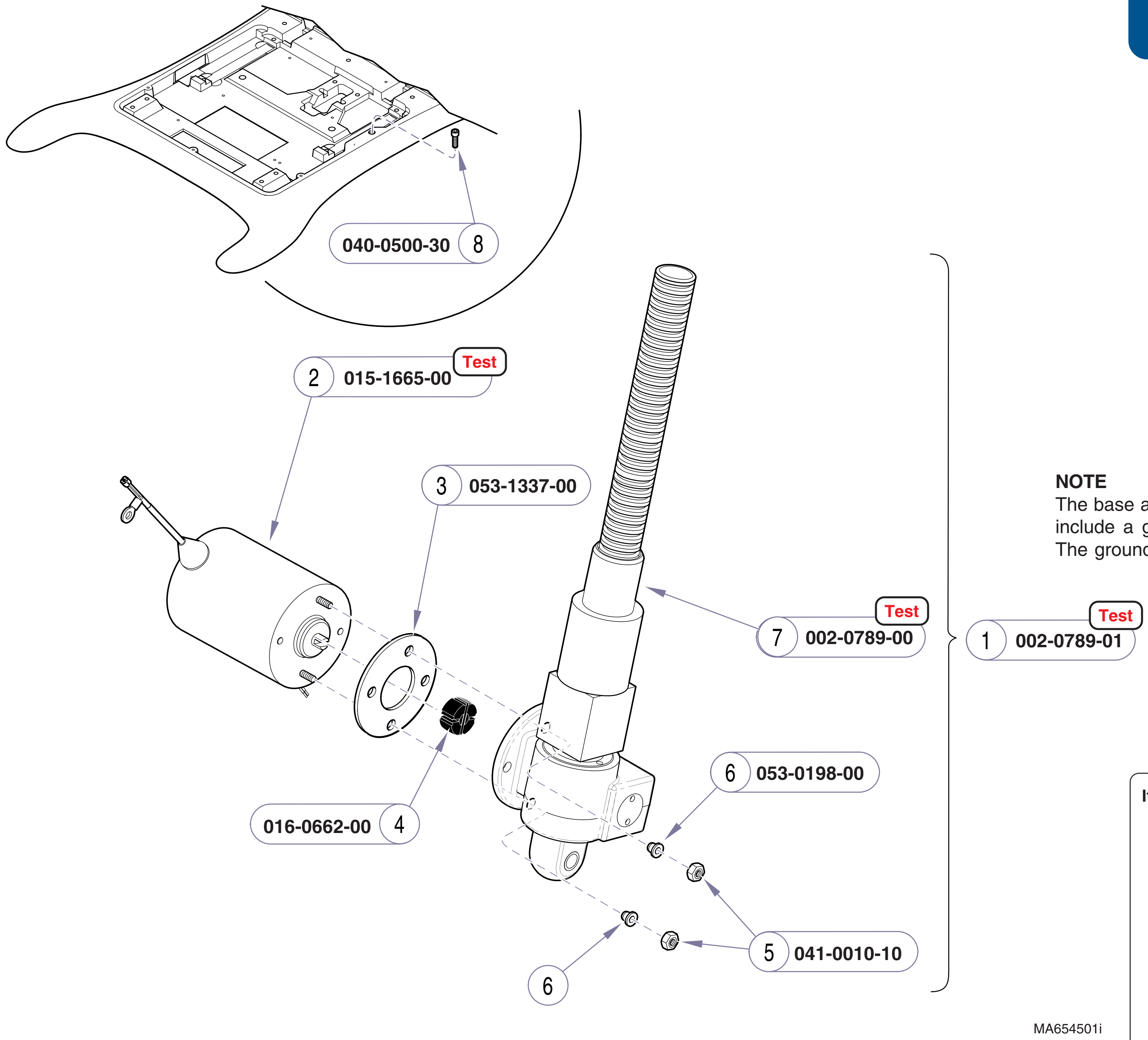
Base Actuator Test B-10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2 015-1665-00 Test
3 053-1337-00
7 002-0789-00 Test
1 002-0789-01 Test
6 053-0198-00
016-0662-00 4
5 041-0010-10
6
MA654501i

NOTE
The base actuator & ball screw assembly kits each include a grounding harness (015-0737-22).
The grounding harness is required on early models only.

Item	Description	Qty.
1	Base Actuator Kit *(includes items 2 thru 7) - see NOTE*	1
2	• Motor	1
3	• Motor Isolator	1
4	• Coupler	1
5	• Nut	2
6	• Shoulder Washer	2
7	• Ball Screw Asssembly Kit *(includes item 8) - see NOTE*	1
8	• • Stop Bolt	1

Always Specify Model & Serial Number

Models: **Serial Numbers:**	*230 (all)* V1000 thru V109945	*630 (all)* V1000 thru V109444	*75 (-019 / -020 / -021)* V1000 thru V109444

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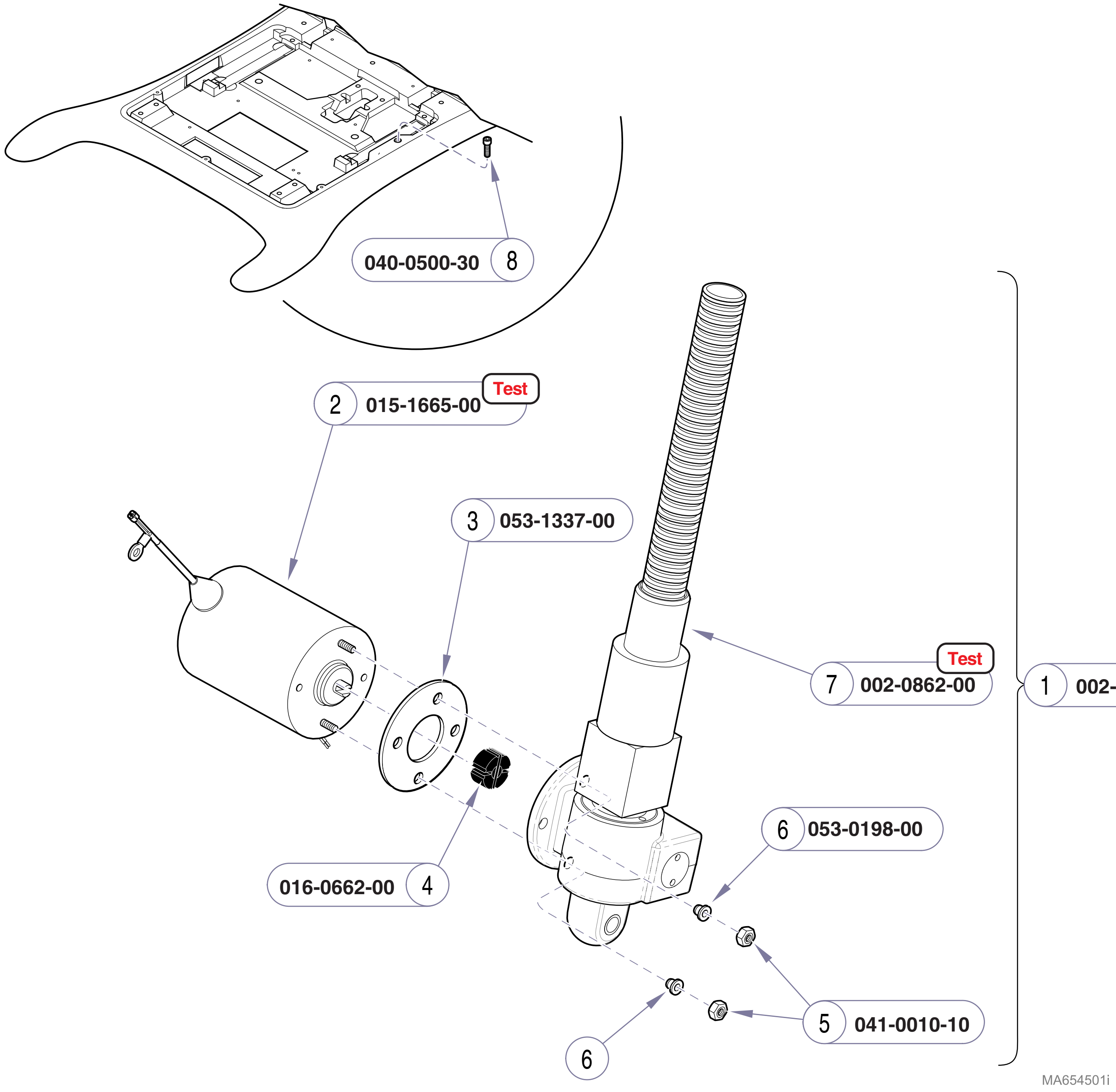
Base Actuator Test B-10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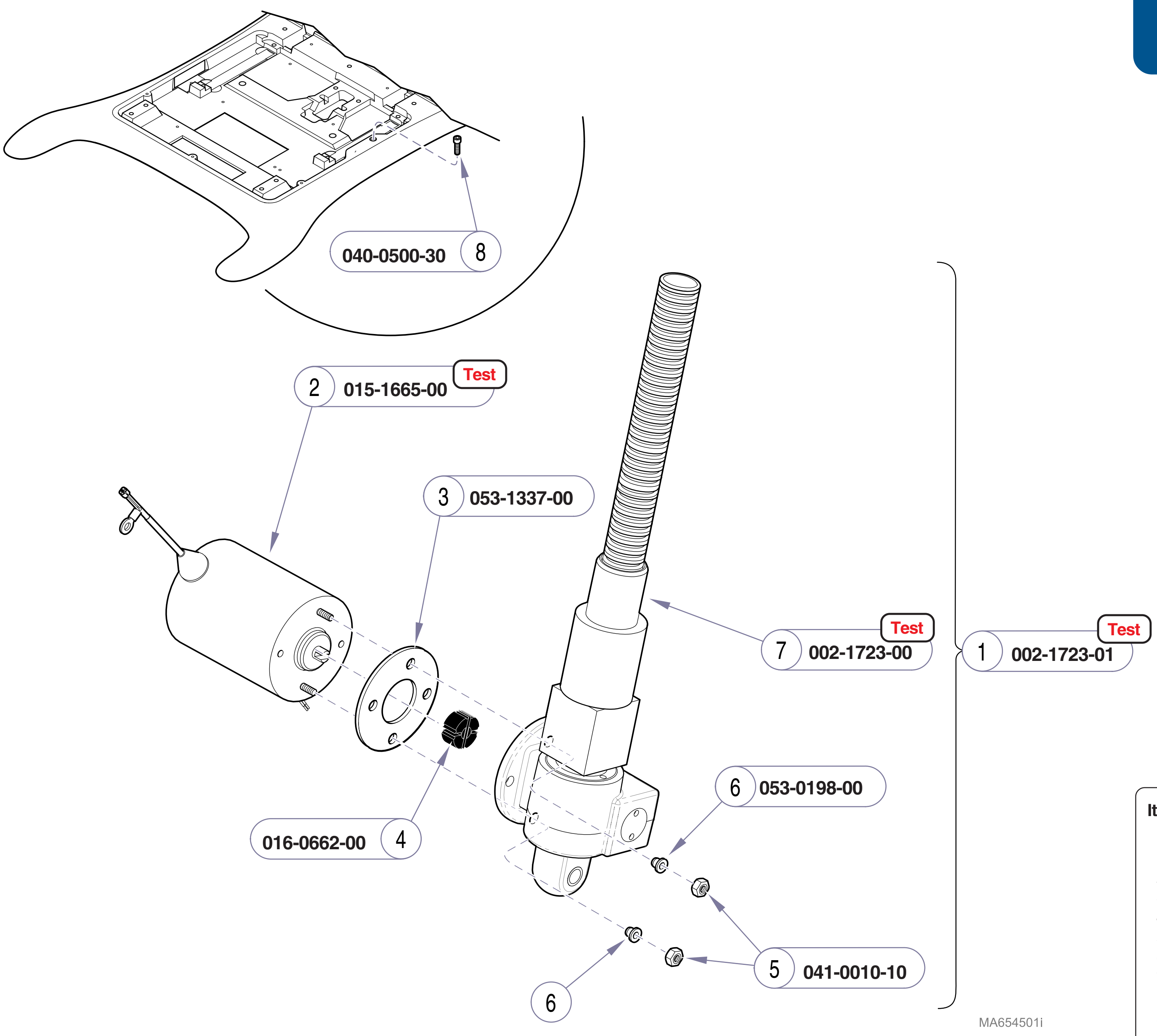
2 015-1665-00 Test
3 053-1337-00
7 002-0862-00 Test
1 002-0862-01 Test
6 053-0198-00
016-0662-00 4
5 041-0010-10
6
MA654501i

Item	Description	Qty.
1	Base Actuator Kit *(includes items 2 thru 7)*	1
2	• Motor	1
3	• Motor Isolator	1
4	• Coupler	1
5	• Nut	2
6	• Shoulder Washer	2
7	• Ball Screw Asssembly Kit *(includes item 8)*	1
8	• • Stop Bolt	1

Always Specify Model & Serial Number

Rev. 11/15/13

Refer To:	**Page**
Base Actuator Test	B-10


040-0500-30 8
2 015-1665-00 Test
3 053-1337-00
7 002-1723-00 Test
1 002-1723-01 Test
6 053-0198-00
016-0662-00 4
5 041-0010-10
6
MA654501i

Item	Description	Qty.
1	Base Actuator Kit *(includes items 2 thru 7)*	1
2	• Motor	1
3	• Motor Isolator	1
4	• Coupler	1
5	• Nut	2
6	• Shoulder Washer	2
7	• Ball Screw Asssembly Kit *(includes item 8)*	1
8	• • Stop Bolt	1

Always Specify Model & Serial Number

Models:	***230*** *(all)*	***630*** *(all)*	***75*** *(-019 / -020 / -021)*
Serial Numbers:	V1399452 thru present	V1399452 thru present	V1399452 thru present

Base Actuator

Back

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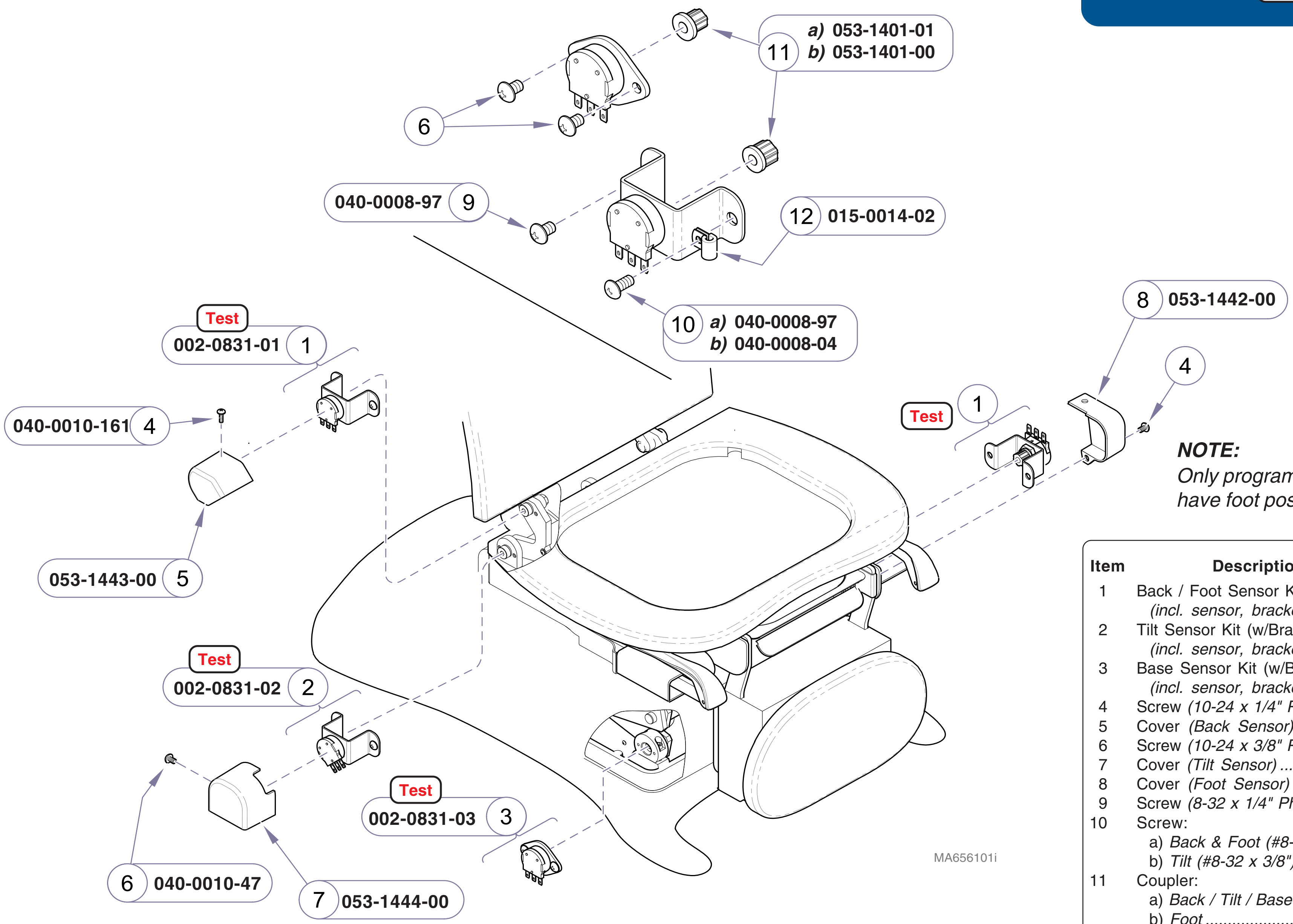
Refer To:

Go To Page:

Position Sensor Test B-32


a) 053-1401-01
11
b) 053-1401-00
6
040-0008-97
9
12
015-0014-02
Test
002-0831-01
1
10
a) 040-0008-97
b) 040-0008-04
8
053-1442-00
4
040-0010-161
4
Test
1
053-1443-00
5
Test
002-0831-02
2
Test
002-0831-03
3
6
040-0010-47
7
053-1444-00
MA656101i

NOTE:
Only programmable models have foot position sensor.

Item	Description	Qty.
1	Back / Foot Sensor Kit (w/Bracket)	
	(incl. sensor, bracket, coupler)	2
2	Tilt Sensor Kit (w/Bracket)	
	(incl. sensor, bracket, coupler)	1
3	Base Sensor Kit (w/Bracket)	
	(incl. sensor, bracket, coupler)	1
4	Screw *(10-24 x 1/4" Phillips Head)*	4
5	Cover *(Back Sensor)*	1
6	Screw *(10-24 x 3/8" Phillips Head)*	3
7	Cover *(Tilt Sensor)*	1
8	Cover *(Foot Sensor)*	1
9	Screw *(8-32 x 1/4" Phillips Head)*	5
10	Screw:	
	a) *Back & Foot (#8-32 x 1/4")*	3
	b) *Tilt (#8-32 x 3/8")*	1
11	Coupler:	
	a) *Back / Tilt / Base*	3
	b) *Foot*	1
12	Cable Clamp *(Tilt sensor only)*	1

Always Specify Model & Serial Number

Models:	***630*** *(all)*	***75*** *(-020/-021)*
Serial Numbers:	V1000 thru V775313	All

Position Sensors

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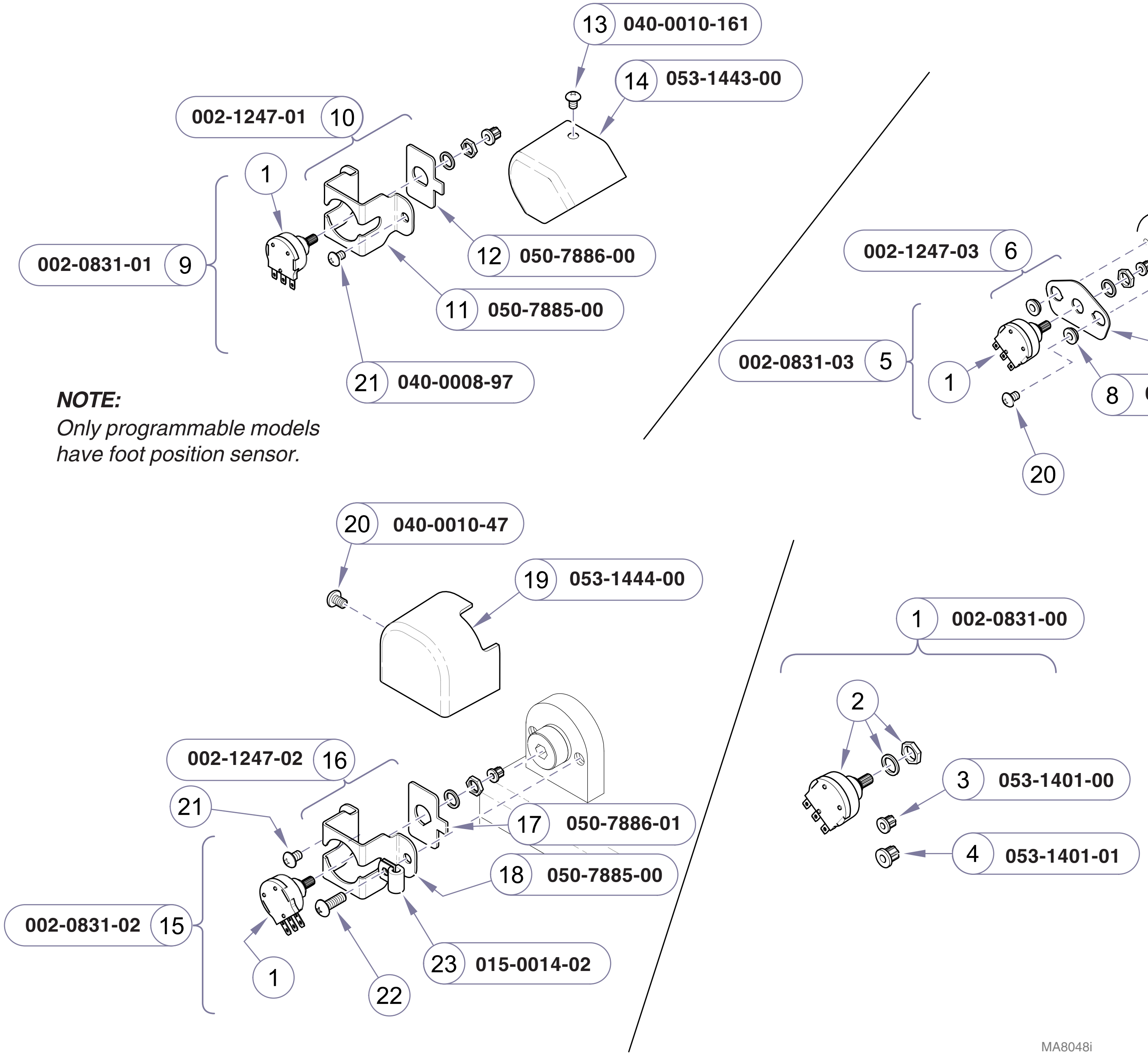
Next

Refer To: **Go To Page:**
Position Sensor Test B-32

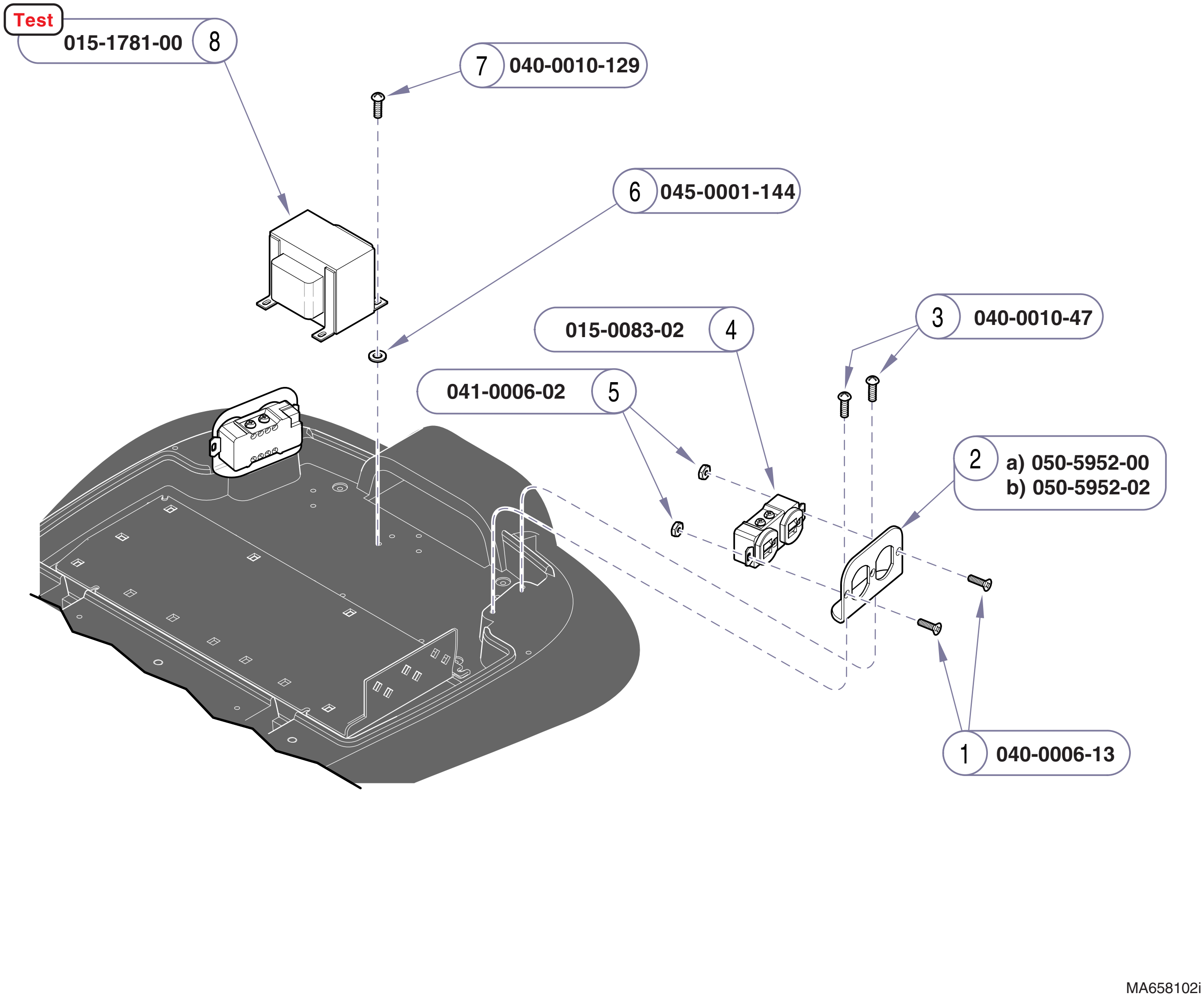

13 040-0010-161
14 053-1443-00
002-1247-01 10
1
002-0831-01 9
12 050-7886-00
11 050-7885-00
21 040-0008-97
002-1247-03 6
002-0831-03 5
1
7 050-7890-00
8 057-1153-00
20
20 040-0010-47
19 053-1444-00
1 002-0831-00
2
3 053-1401-00
4 053-1401-01
002-1247-02 16
21
17 050-7886-01
18 050-7885-00
002-0831-02 15
1
22
23 015-0014-02
MA8048i

NOTE:
Only programmable models have foot position sensor.

Item	Description	Qty.
1	Position Sensor Only Kit *(includes items 2 thru 4)*	4
2	• Position Sensor *(incl. washer & nut)*	1
3	• Coupler *(small: for Foot)*	1
4	• Coupler *(large: for Base / Back / Tilt)*	1
5	BASE Sensor Kit w/Bracket *(includes items 1 & 6)*	1
6	• Bracket Kit: BASE *(incl. items 7 & 8)*	1
7	• • Mounting Plate	1
8	• • Flange Bushing	2
9	BACK / FOOT Sensor Kit w/Bracket *(includes items 1 & 10)*	2
10	• Bracket Kit: BACK / FOOT *(includes items 11 & 12)*	2
11	• • Bracket	1
12	• • Mounting Plate	1
13	Screw *(#10-24 x 1/4")*	1
14	Cover *(BACK Sensor)*	1
15	TILT Sensor Kit w/Bracket *(includes items 1 & 16)*	1
16	• Bracket Kit: TILT *(includes items 17 & 18)*	1
17	• • Bracket	1
18	• • Mounting Plate	1
19	Cover *(TILT Sensor)*	1
20	Screw *(#10-24 x 3/8")*	3
21	Screw *(#8-32 x 1/4")*	5
22	Screw *(#8-32 x 3/8")*	1
23	Wire Clamp	1

Always Specify Model & Serial Number

Refer To: **Page**
Isolation Transformer Test......... B-29

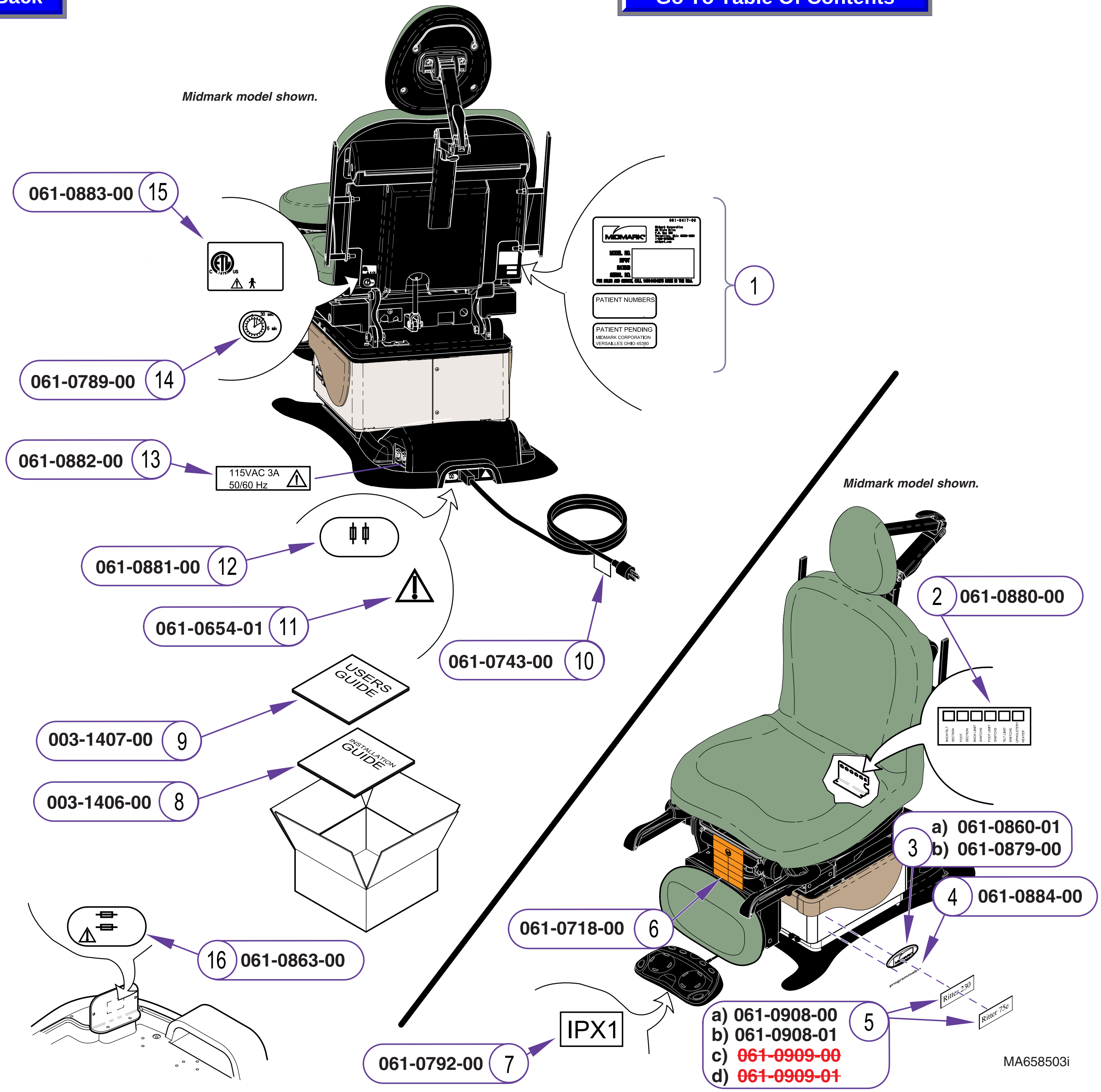

Test
015-1781-00 8
7 040-0010-129
6 045-0001-144
015-0083-02 4
3 040-0010-47
041-0006-02 5
2 a) 050-5952-00
b) 050-5952-02
1 040-0006-13
MA658102i

Item	Description	Qty.
1	Screw *(6-32 x self-tap)*	4
2	Receptacle Plate:	
	a) *Midmark models*	2
	b) *Ritter models*	2
3	Screw *(10-24 x 3/8" pan head)*	4
4	Duplex Receptacle	2
5	Nut *(6-32 hex)*	4
6	Rubber Washer	4
7	Screw *(10-24 x 1/2" Phillips)*	4
8	Isolation Transformer	1

Always Specify Model & Serial Number

Models:	***230*** *(-002)*	***630*** *(-003/-004/-008/-009)*	***75*** *(-020/-021)*
Serial Numbers:	All	All	All

Table Receptacles


Midmark model shown.
061-0883-00 15
061-0789-00 14
061-0882-00 13
115VAC 3A
50/60 Hz
061-0881-00 12
061-0654-01 11
061-0743-00 10
003-1407-00 9
USERS GUIDE
003-1406-00 8
INSTALLATION GUIDE
16 061-0863-00
061-0792-00 7
IPX1
1
PATIENT NUMBERS
PATIENT PENDING
MIDMARK CORPORATION
VERSAILLES OHIO 45380
Midmark model shown.
2 061-0880-00
3 a) 061-0860-01
b) 061-0879-00
4 061-0884-00
061-0718-00 6
a) 061-0908-00
b) 061-0908-01
c) ~~061-0909-00~~
d) ~~061-0909-01~~
5
Ritter 230
Ritter 75e
MA658503i

Item	Description	Qty.
1	Serial Number Plate	1
	Patent Number Label	1
	Patent Pending Label	1
2	Connector Location Label	1
3	Midmark Logo Label:	
	a) *Standard*	2
	b) *75L*	2
4	Programable Label	2
5	Ritter Logo Label:	
	a) *Standard (left side)*	1
	b) *Standard (right side)*	1
	c) *75e (left side)*	1
	d) 75e *(right side)*	1
6	Stirrup Lifting Label	1
7	IPX Footswitch Label	1
8	Installation Guide	1
9	Users Guide	1
10	Cord Tag	1
11	Caution Label	1
12	Fuse Replacement Label	1
13	Receptacle Rating Label	2
14	Duty Cycle label	1
15	ETL Classified Label	1
16	Upholstery Heater Fuse Label	1

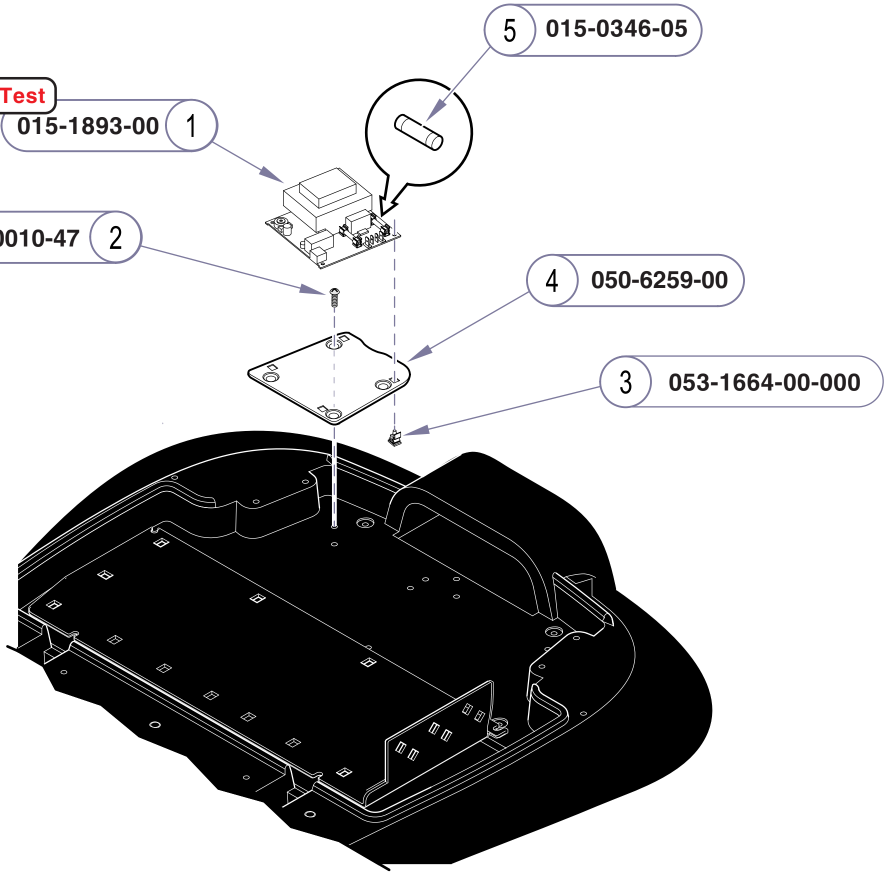
Always Specify Model & Serial Number

Label Location

Models: ***ALL***
Serial Numbers:

Rev. 5/28/15

Refer To:	**Page**
Uph. Heater System Test	B-29
Section D - *Wiring Diagrams*	D-1


5 015-0346-05
Test
015-1893-00 1
040-0010-47 2
4 050-6259-00
3 053-1664-00-000

MA694700i

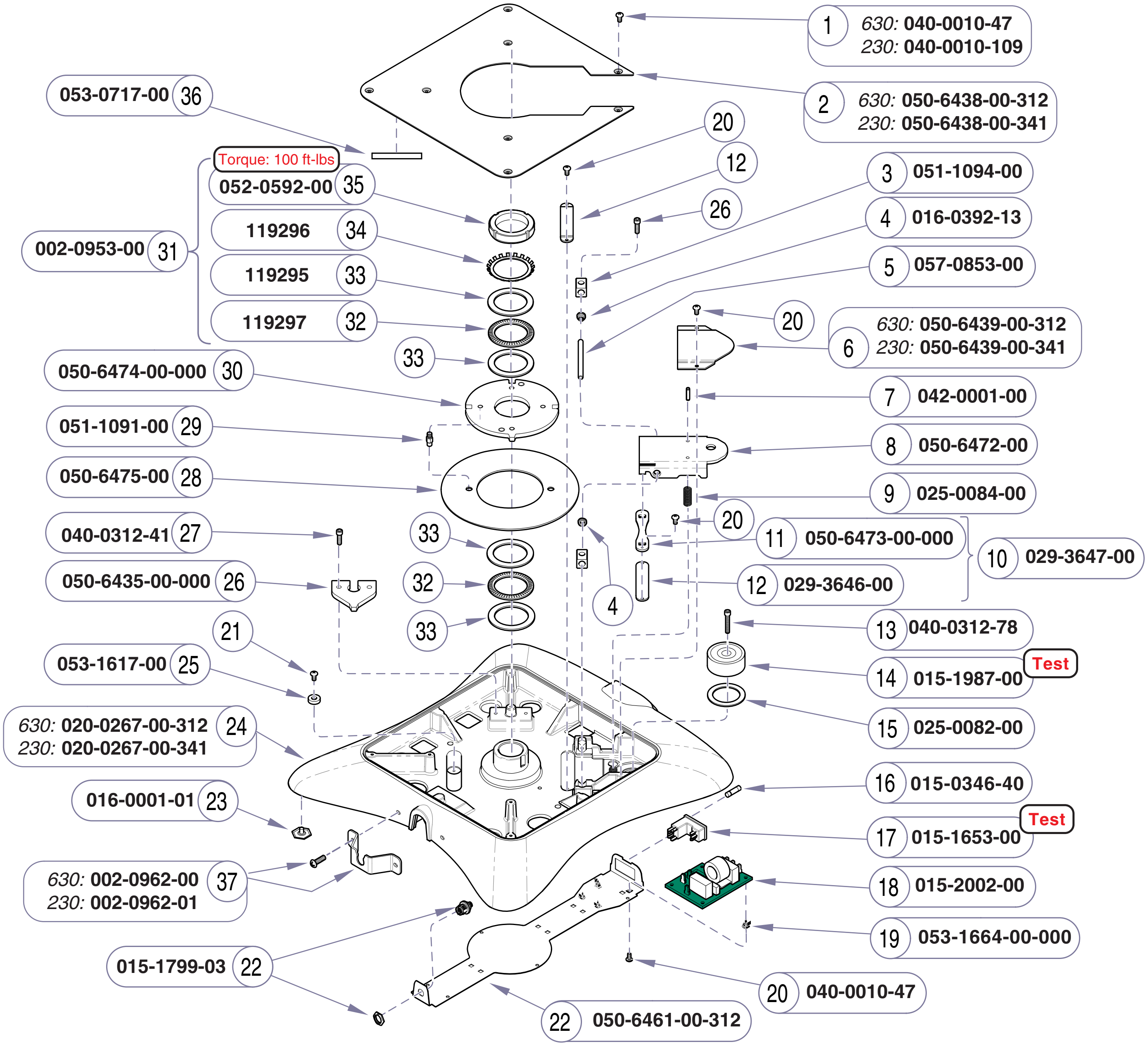
Item	Description	Qty.
1	Upholstery Heater PC Board *[includes two fuses (item 5)]*	1
2	Screw (#10-24 x 3/8")	4
3	Standoff	4
4	Mounting Plate	1
5	Fuse *(3 ag, Slo-Blo, 0.5 A, 250V)*	2
6	Wiring Harnesses - *not shown* *(refer to: Section D - Wiring Diagrams)* ..	Ref

Always Specify Model & Serial Number

Models: ***630*** ***(-007)***
Serial Numbers: *V2200 thru present*

Upholstery Heater PC Board

Refer To: **Go To Page:**
Electro-magnet Test B-53
EMI Filter Board Test B-54


1 630: 040-0010-47 230: 040-0010-109
2 630: 050-6438-00-312 230: 050-6438-00-341
053-0717-00 36
20
12
26
Torque: 100 ft-lbs
052-0592-00 35
002-0953-00 31
119296 34
119295 33
119297 32
3 051-1094-00
4 016-0392-13
5 057-0853-00
20
6 630: 050-6439-00-312 230: 050-6439-00-341
33
050-6474-00-000 30
7 042-0001-00
051-1091-00 29
8 050-6472-00
050-6475-00 28
9 025-0084-00
20
11 050-6473-00-000
10 029-3647-00
040-0312-41 27
33
32
050-6435-00-000 26
12 029-3646-00
4
21
33
13 040-0312-78
053-1617-00 25
14 015-1987-00
Test
15 025-0082-00
630: 020-0267-00-312 230: 020-0267-00-341 24
16 015-0346-40
016-0001-01 23
17 015-1653-00
Test
630: 002-0962-00 230: 002-0962-01 37
18 015-2002-00
19 053-1664-00-000
015-1799-03 22
20 040-0010-47
22 050-6461-00-312

MA710002i

Item	Description	Qty.
1	Screw *(#10-24 x 3/8")*	5
2	Rotational Base Cover	1
3	Shaft Mount	2
4	DU Bearing	2
5	Bearing Shaft	2
6	Brake Lever Cover	1
7	Roll Pin	2
8	Brake Lever	1
9	Spring	2
10	Swivel Plate Assy *(incl. items 11 &12)*	1
11	• Swivel Plate	1
12	• Brake Pad Assembly	2
13	Cap Screw *(5/16"x18 x1 3/4")*	1
14	Electromagnet Assembly	1
15	Wave Spring	1
16	Fuse *(250V, 6.3A, Type-T, Slo-Blo)*	2
17	Power Inlet	1
18	PC Board *(inlet filter)*	1
19	PC Board Standoff	4
20	Screw *(#10-24 x 3/8")*	14
21	Wire Trough Cover	1
22	I/O Harness Assembly	1
23	Leveling Screw	4
24	Lower Base	1
25	Delrin Spacer	1
26	Rotational Stop Bracket	1
27	Screw *(5/16"-18 x 1")*	4
28	Brake Disc	1
29	Brake Disc Shoulder Screw *(apply Loctite 262 to threads)*	2
30	Rotation Wheel	1
31	Bearing Kit *(incl. items 32 thru 35)*	1
32	• Thrust bearing	2
33	• Race Washer *(2.75 id X 3.62 od)*	4
34	• Lockwasher	1
35	• Lock Nut	1
36	Outer Seal	3
37	Control Cord Bracket Kit *(incl. bracket & two #10-24 x 1/2" screws):*	
	a) *Midmark models*	1
	b) *Ritter models*	1

Always Specify Model & Serial Number

Rotational Base Lower Section

Models:	***230*** *(-003)*	***630*** *(-005 & -006)*
Serial Numbers:	All	All

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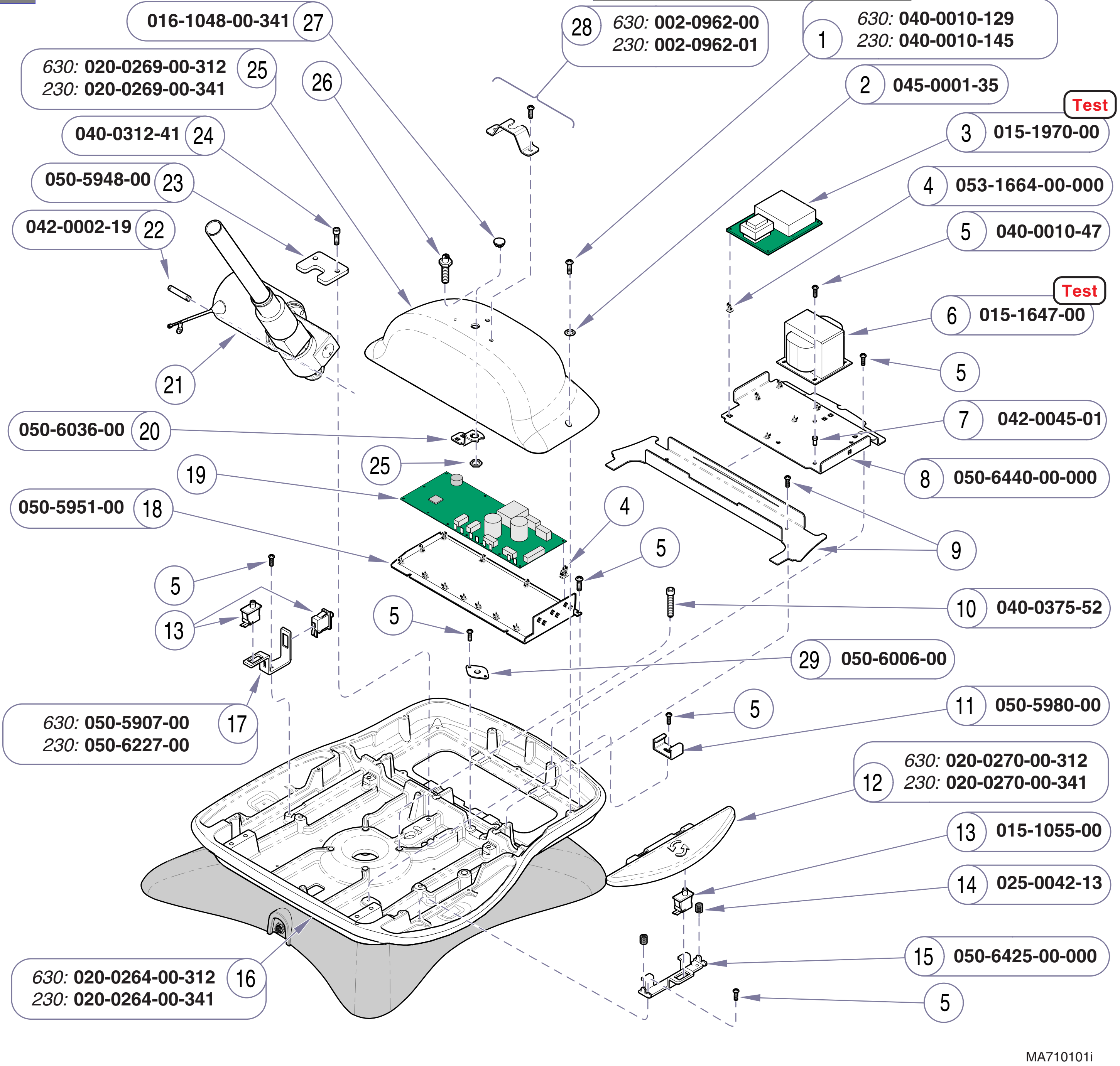
016-1048-00-341 27
28 630: 002-0962-00
230: 002-0962-01
1 630: 040-0010-129
230: 040-0010-145
630: 020-0269-00-312
230: 020-0269-00-341 25
26
2 045-0001-35
Test
3 015-1970-00
040-0312-41 24
050-5948-00 23
4 053-1664-00-000
042-0002-19 22
5 040-0010-47
Test
6 015-1647-00
21
5
7 042-0045-01
050-6036-00 20
25
8 050-6440-00-000
19
050-5951-00 18
4
5
9
5
13
5
10 040-0375-52
29 050-6006-00
5
11 050-5980-00
630: 050-5907-00
230: 050-6227-00 17
12 630: 020-0270-00-312
230: 020-0270-00-341
13 015-1055-00
14 025-0042-13
15 050-6425-00-000
630: 020-0264-00-312
230: 020-0264-00-341 16
5
MA710101i

Refer To: **Go To Page:**
Main System Transformer Test . B-30
Rot. Base PC Board Test B-52
Section D - *Wiring Diagrams* D-1
Base Shrouds:
Midmark models E-15
Ritter models E-16
Electrical Components E-23
Base Actuator E-24*
** multiple pages due to model / serial # break*

Item	Description	Qty.
1	Screw *(10-24 x .50 tt)*	2
2	Lockwasher *(#10 Int. tooth)*	2
3	Rotation Control PC Board Assy.	1
4	PC Board Standoff	16
5	Screw *(Pan hd phl. 10-24 X 3/8")*	18
6	Main System Transformer Assy.	1
7	Nutsert *(10-24)*	4
8	Transformer Bracket	1
9	Refer to: *Base Shrouds*	Ref.
10	Bolt *(3/8"-16 x 2")*	4
11	Harness Clip	1
12	Brake Pedal	2
13	Limit Switch	4
14	Compression Spring	4
15	Switch Hinge Bracket	2
16	Upper Base Casting	1
17	Limit Switch Bracket	1
18	PC Board Base Plate	1
19	Refer to: *Electrical Components*	Ref.
20	Cable Holder *(630 models only)*	1
21	Refer to: *Base Actuator*	Ref.
22	Dowel Pin	1
23	Actuator Plate	1
24	Bolt *(5/16"-18 x 1")*	2
25	PC Board Cover	1
26	ConnectionPort / *Wiring Harness (incl. nut)* *(Refer to Section D)*	Ref.
27	Plug *(230 models only)*	1
28	Control Cord Bracket Kit *(incl. bracket & two #10-24 x 1/2" screws):* a) *Midmark models*	 1
	b) *Ritter models*	1
29	Grounding Plate	1

Always Specify Model & Serial Number

Models:	***230*** *(-003)*	***630*** *(-005 & -006)*
Serial Numbers:	All	All

Rotational Base Upper Section

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Current Medical Color Pallette:

Ritter Soft Touch & Seamless Upholstery

This chart shows all standard Ritter upholstery colors currently available.
Special order colors may be available at an additional charge.

Color Sample	Color Name	Numeric Code *(-xxx)*: Upholstery	Color Insert
🟫	**Sand Grey**	**-200**	**-200**
🟫	**Slate Grey**	**-201**	**-201**
🟦	**Iris Blue**	**-202**	**-202**
🟩	**Nile Green**	**-203**	**-203**
🟫	**Terra Rosa**	**-204**	**-204**
🟪	**Royal Lavendar**	**-205**	**-205**
⬜	**Pebble Grey**	**-216**	**-216**
🟪	**Perfect Plum**	**-229**	**-229**
🟩	**Moss**	**-230**	**-230**
🟦	**Navy**	**-231**	**-231**
🟫	**Shadow**	**-232**	**-232**
🟦	**Dusty Blue**	**-233**	**-233**
🟧	**Clay**	**-234**	**-234**
⬛	**Black**	**-312**	**-312**

Effectivity Date: ***January 1, 2006 thru present***

Current Medical Color Pallette:

Midmark Premium Upholstery

This chart shows all standard Midmark Premium upholstery colors currently available. Special order colors may be available at an additional charge.

Color Sample	Color Name	Numeric Code *(-xxx)*: Upholstery	Color Insert
🟦	Blueberry	-235	-235
🟩	Silver Sage	-236	-236
🟩	Tea Green	-237	-237
⬜	Fossil Grey	-238	-238
🟦	Cashmere Blue	-239	-239
🟥	Terra Cotta	-240	-240
🟦	Belagio	-247	-247
🟩	Siena	-248	-248
🟩	Tuscany	-249	-249
⬜	Firenze	-250	-250
🟦	Capri	-251	-251
🟥	Treviso	-252	-252
⬛	Black	-312	-312

Color Sample	Color Name	Numeric Code *(-xxx)*: Upholstery	Color Insert
🟦	Wedgewood	-206	-206
🟩	Monaco	-207	-207
🟥	Royal Carriage	-208	-208
🟫	Monet	-209	-209
⬜	Soft Pearl	-210	-210
🟦	Waterford	-211	-206
🟩	English Gardens	-212	-207
🟥	Cabernet	-213	-208
🟫	Tapestry	-214	-209
⬜	Cathedral	-215	-210

Effectivity Date: ***January 1, 2006 thru present***

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Current Medical Color Pallette:

Midmark Ultra-Premium Upholstery

This chart shows all standard Midmark Ultra-Premium upholstery colors currently available. Special order colors may be available at an additional charge.

Color Sample	Color Name	Numeric Code *(-xxx)*:	
		Upholstery	Color Insert
⬛	Raven Wing	-228	-228
🟦	Pacific Blue	-241	-235
🟩	Spruce	-242	-242
🟩	Olivine	-243	-237
⬜	Arctic	-244	-244
🟦	Sky	-245	-239
🟥	Canyon	-246	-246

Effectivity Date: ***January 1, 2006 thru present***

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The Technical Publications Department of Midmark Corporation takes pride in its manuals. We are sure that our manuals will fill all your needs when you are performing scheduled maintenance, servicing, or repairs on a Midmark product. However, if you find any errors or feel there should be a change, addition, or deletion to the manuals, please let us know. We will correct any errors that we are made aware of and we will review requests for changes, additions, or deletions to the manuals and incorporate those requests deemed appropriate. If you see something in one of our manuals that you like or dislike, please let us know. Also, if there is something you feel we could do to produce a better manual, please let us know.

If an error is found, please list the page and paragraph/figure in which the error was found along with a brief description of what the error is. If the correction to the error is known, please include that information also. If a change, addition, or deletion is being requested, please list the page and paragraph/figure needing the change, along with a brief description of how you feel the paragraph/figure should be changed.

Please fax or mail a copy of this completed comment sheet to:

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60 Vista Drive
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Fax: (937) 526-5542

Page Number	Paragraph/Figure	Description

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ATTENTION: CUSTOMER SERVICE DEPARTMENT

IMPORTANT NOTES:

1) ***Use this form for all non-warranty orders only****. Warranty orders must be telephoned in (1-800-643-6275).*

2) *FAX number to send order to:*
877-249-1793

3) *All emergency orders must be received @ Midmark by 1:00 pm EST.*

4) *All underlined headings should be filled in prior to submittal.*

ADDITIONAL COMMENTS:

SERVICE PARTS FAX ORDERING FORM

(Do not tear out this page. Photo copy this page for use only.)

MIDMARK®

DATE: ____ / ____ / ________ **TIME:** ________________ am pm

METHOD OF SHIPMENT: ______________________________

PRIORITY: ☐ **NON-EMERGENCY ORDER {to ship within 72 hours if part(s) are in stock.}**

☐ **EMERGENCY ORDER {to ship within 24 hours if part(s) are in stock.} [see note 3]**

DEALER P.O. #: ______________________________

ACCOUNT #: ______________________________

MODEL #:	**SERIAL #:**	**SALES ORDER #** (if applicable)

NAME: ______________________________

ADDRESS: ______________________________

CITY: ____________________ **STATE:** ____ **ZIP:** ________

CONTACT: ______________________________

PHONE: ______________________________

FAX #: ______________________________

SHIP TO: ______________________________

____

____

____

____

____

LINE #	PART NUMBER	QTY.	DESCRIPTION	COLOR (if applicable)

CREDIT CARD INFORMATION

CARD TYPE ________________________ **CARD #** ________-________-________-________ **EXP. DATE** ______ / ______ / ________

NAME ON CARD ______________________________________ **SIGNATURE** ______________________________________

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P.O. Box 286
Versailles, OH 45380-0286
937-526-3662
Fax 937-526-5542

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